L 16885-65 EWT(1)/EWP(m)/EWT(m)/EWA(d)/FCS(k)/EWA(1) Pd-1/Pi-4 AEDC(a)/ASD(f)-2/
ACCESSION NR: AR4045231 AFETR/AFTC(a) JD S/0124/64/000/007/B036/B036

SOURCE: Ref. zh. Mekhanika, Abs. 7B239

AUTHOR: Skvortsov, T. P.

TITLE: The question of the form of the initial boundary section of an ultrasonic stream flowing out into a subsonic similarly-directed flow which is limited by a wall

CITED SOURCE: Tr. Kazansk. aviats. in-ta, vy*p. 80, 1963, 76-83

TOPIC TAGS: aerodynamics, ultrasonic flow, boundary section, limited air stream

TRANSLATION: A supersonic stream of non-viscous gas flows along a rectilinear wall and, after converging with the wall, comes into contact with a non-viscous gas flow, located beneath the wall and traveling at subsonic speed. The subsonic stream is limited from above by an infinite rectilinear wall. The problem is planar, the flow is steady-state. If is assumed that the boundary of the supersonic stream is the line of the tangential discontinuity of the velocity. The subsonic flow is taken to be unidimensional. After converging with the wall, the supersonic flow is deflected downward and a Prandtle-Meyer flow is formed in it. Meanwhile, the subsonic stream is compressed and the

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L 16885-65
ACCESSION NR: AR4045231

velocity within it is increased. In determining the form of the boundary, Bernoulli equations are used for the super- and sub-sonic flow, along with rate constancy equations and an equation of ideal isentropy for the subsonic flow, as well as the condition of pressure continuity in the transition through the separation boundary of the flows.
M.I. Gurevich.

SUB CODE: ME ENCL: 00

Card 2/2

L 25449-66 EWP(m)/EWT(1)/ETC(m)-6/EWA(d)/EWA(1) WW

ACC NR: AT6007336 SOURCE CODE: UR/2529/63/000/080/0076/0083

59

B+1

AUTHOR: Skvortsov, T. P.

ORG: Kazan Aviation Institute (Kazanskiy aviatsionnyy institut)

TITLE: The initial form of the boundary region of a plane supersonic jet flowing into an accompanying subsonic stream bounded by a wall

SOURCE: Kazan. Aviatsionnyy institut. Trudy, no. 80, 1963. Matematika i mekhanika (Mathematics and mechanics), 76-83

TOPIC TAGS: fluid dynamics, fluid flow, fluid kinetic equation, supersonic flow

ABSTRACT: The initial shape of the boundary region between a high pressure supersonic jet flowing into an accompanying subsonic low pressure gas stream bounded by a short fin was calculated. The calculation is based on the six equations

$$\frac{\varkappa}{\varkappa-1}\cdot\frac{p_{02}}{\rho_{02}}\left[\left(\frac{p_2}{p_{02}}\right)^{\frac{\varkappa-1}{\varkappa}}-1\right]+\frac{w_2^2}{2}=0$$

$$G_2=\rho_2\cdot F_2\cdot w_2$$

$$\frac{p_2^{\varkappa}}{\rho_{02}^{\varkappa}}=\frac{p_2}{p_{02}}$$

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ACC NR: AT6007336

0

$$p_1 = p_{01}\left(1 - \frac{\kappa-1}{\kappa+1}\lambda_1^2\right)^{\frac{\kappa}{\kappa-1}}$$

$$p_1 = p_2$$

$$\frac{dF}{dx} = -\operatorname{tg}\theta$$

where p, T, ρ are the pressure, temperature, and density of the flowing gas, respectively; p_0, T_0, ρ_0 are the corresponding pressure, temperature, and density of the retarded stream; κ is the isentropic index; G is the gas input; F is the cross-sectional area of flow; F_{kr} is the critical cross section;

$$m = \sqrt{\kappa \cdot \left(\frac{2}{\kappa+1}\right)^{\frac{\kappa+1}{\kappa-1}}} \sqrt{\frac{g}{R}}$$

is a constant in the flow equation; g is the acceleration of gravity; R is the gas constant; $\tau\left(1 - \frac{\kappa-1}{\kappa+1}\lambda^2\right)$ is the gasodynamic function; $\lambda \frac{w}{a_{kr}}$ is the velocity coefficient; w is the gas velocity; a_{kr} is the critical velocity of gas; M is the Mach number; a is the velocity of sound; θ is the angle of turn of the boundary between the two streams. Index 1 refers to the supersonic jet, index 2 to the subsonic stream. On the basis of the six equations, expressions for the critical fin length, $\bar{X}_{kr}$, and the function τ have been derived

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ACC NR: AT6007336

$$\overline{X}=\frac{1}{A^{\frac{1}{\kappa}}}\cdot\int_{\tau_\lambda=1}^{\tau_1}\lg\gamma_1\cdot\frac{1}{\tau_1^{\frac{1}{\kappa-1}}}\left[\frac{1}{\kappa-1}\cdot\frac{1}{\tau_1}\cdot\frac{1}{\sqrt{1-A^{\frac{\kappa-1}{\kappa}}\cdot\tau_1}}\right.$$

$$\left.-\frac{1}{2}A^{\frac{\kappa-1}{\kappa}}\frac{1}{\sqrt{\left(1-A^{\frac{\kappa-1}{\kappa}}\cdot\tau_1\right)^3}}\right]d\tau_1=\overline{X}(\tau_1,A),$$

$$\tau_{\text{nozzle outlet}}=\frac{2}{(\kappa+1)A^{\frac{\kappa-1}{\kappa}}}$$

The angle of turn θ was determined after O. P. Sidorov (Lektsii po gazovoy dinamike. KAI, 1958). Orig. art. has: 2 figures and 23 equations.

SUB CODE: 20/ SUBM DATE: 30Aug62/ ORIG REF: 003

Card 3/3

[illegible], V., [illegible], M., and [illegible], S.

"Restoration of the amino-acid composition of cerebral albumins in various functional states," a paper submitted at the 2nd Conference on Biochemistry of the Nervous System, AN UkrSSR, 12-16 Feb 1957, Kiev.

1122[illegible]2

SKVORTSOV, V. (Kiyev)

Infrared injection burners. Pozh.delo 7 no.6:25 Je '61. (MIRA 14:6)

(Stoves, Gas—Safety appliances)
(Infrared rays)

SKVORTSOV, V. (g. Samarkand).

Give young people training in aviation. Kryl.rod. 2 no.2: 8 F '51. (MLRA 10:2)

(Samarkand Province--Aeronautics--Study and teaching)

SKVORTSOV, V., NECHAYEVA, G., SADIKOV, N.

"Restoration of the Amino-Acid Composition of Cerebral Albumins in Various Functional States." Papers submitted at 2nd Conference on Biochemistry of the Nervous System, AS USSR, 12-16 Feb 1957, Kiev

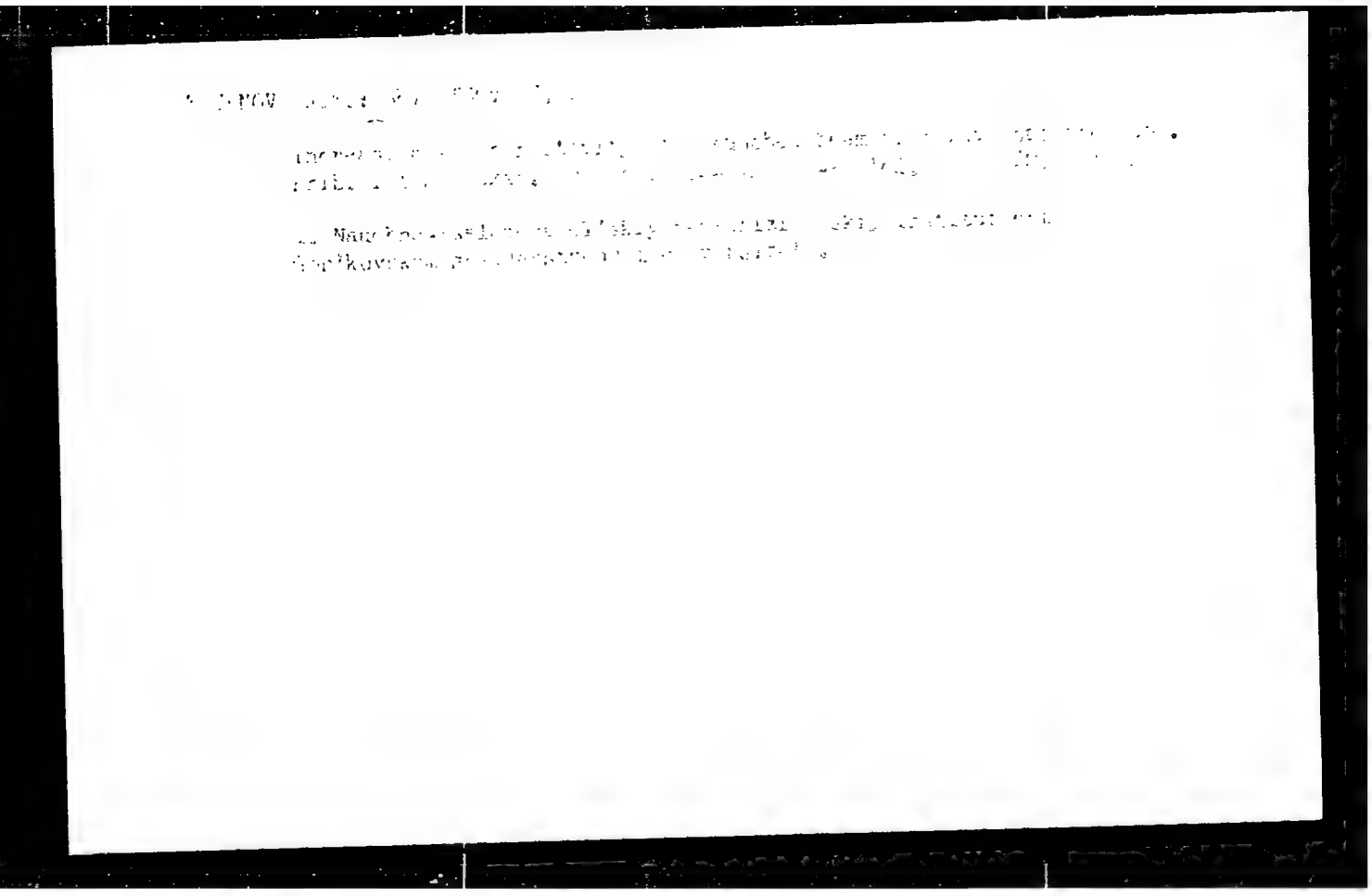
Translation 1122802

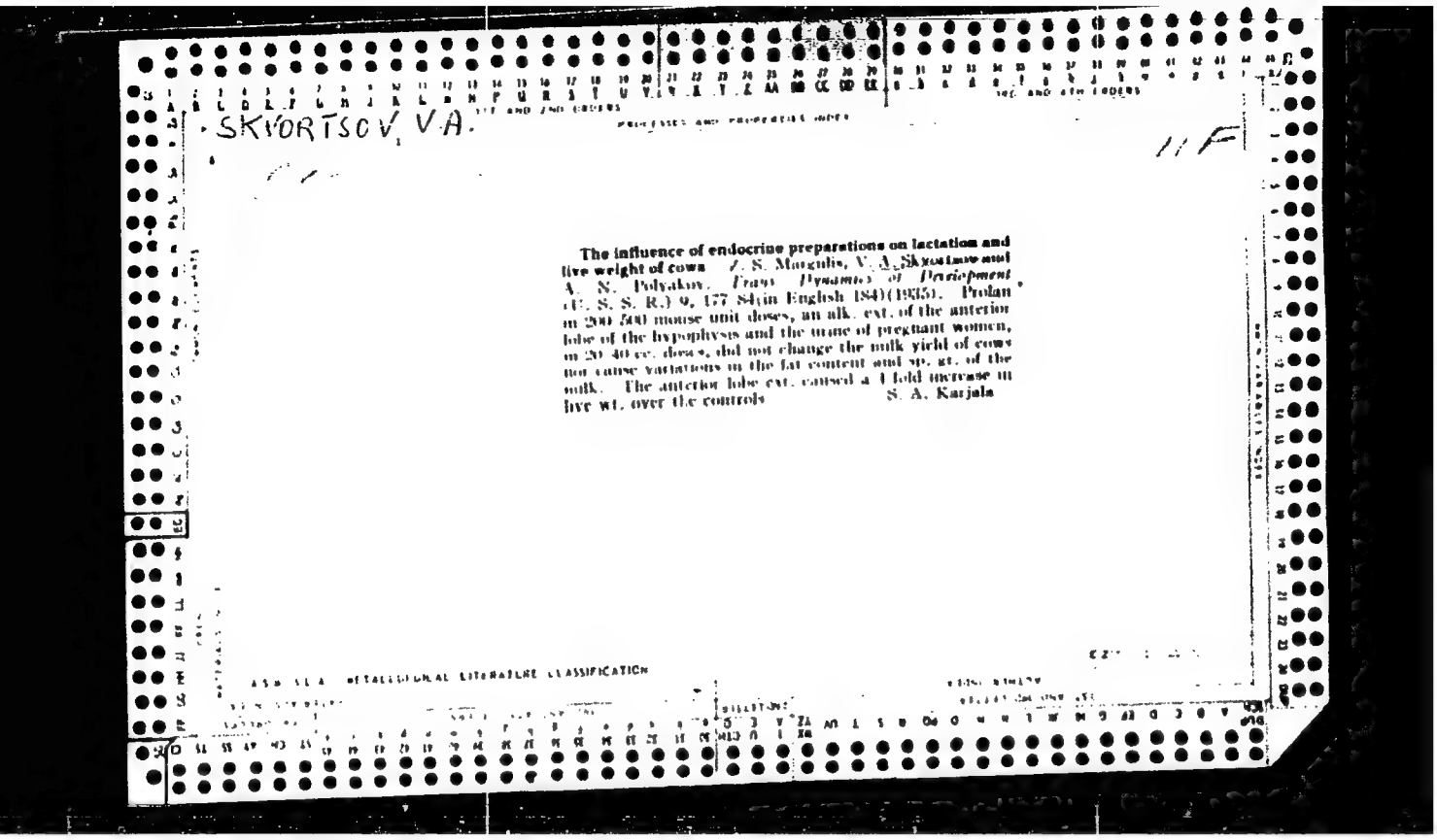
KRUPNOV, A.F.; SKVORTSOV, V.A.

Formaldehyde beam maser with a 4mm. band. Izv. vys. ucheb. zav.; radiofiz. 5 no.4:820 '62. (MIRA 16:7)

1. Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete.

(Masers)





SKVORTSOV, V.A.

11F

The influence of endocrine preparations on lactation and live weight of cows. Z. S. Maogulis, V. A. Skvortsov and A. S. Polyakov. *Trans. Dynamics of Development* (U. S. S. R.) 9, 177-84 (in English 184) (1935). Prolan in 200-500 mouse unit doses, an alk. ext. of the anterior lobe of the hypophysis and the urine of pregnant women, in 20-40 cc. doses, did not change the milk yield of cows nor cause variations in the fat content and sp. gr. of the milk. The anterior lobe ext. caused a 1-fold increase in live wt. over the controls. S. A. Karjala

SKVORTSOV, V. A.

"Influence of Nutritional Factors on the Reproductive Function of Agricultural Animals," Vest. Ak. Nauk SSSR, No.8, pp. 80-85, 1953.

Lab Physiology of Agric. Animals, Inst. Phys. im. Pavlov

SKVORTSOV, V. A.

"The Role of Fodder Materials in the Reproductive Functions of Agricultural Animals." Dr Biol Sci, Inst of Physiology imeni I. P. Pavlov, Acad Sci USSR (Apr-Jun 54). (Vest Ak Nauk, Nov 54) (Short Summary Available)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (11)

SO: Sum. No. 521, 2 Jun 55

SKVORTSOV, V.A., doktor biol.nauk

Role of feeding in the reproduction of animals. Nauka i pered.op. v sel'khoz. 7 no.9:14-16 S '57. (MIRA 10:10)

1. Vologodskiy molochnyy institut.
(Reproduction) (Feeding and feeding stuffs)

SKVORTSOV, V. A. (Prof, Dr Biol Sci)

"Gonadotrophic effect of some cultured and wild-growing plants."

report presented at the 5th Intl Cong on Animal Reproduction & Artificial Insemination, Trent, Italy, 6-13 Sep 64.

Dairy Inst, Vologda.

21184

S/141/60/003/006/023/025
E032/E114

9.2574 (also 1163)

AUTHORS: Skvortsov, V.A., Krupnov, A.F., and Naumov, A.I.

TITLE: A New Maser Without a Freeze-out System

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1960, Vol.3, No.6, pp. 1128-1129

TEXT: A new maser incorporating a molecular beam apparatus producing a beam of ammonia molecules without a liquid nitrogen trap to remove the ammonia vapour, has been developed by the present authors. The apparatus is evacuated by a single diffusion pump type M-5 (N-5) incorporating an oil vapour trap. The molecular beam gun and the resonator were placed immediately above the pump. In the absence of the beam the vacuum was 2×10^{-6} mm Hg, while under working conditions (optimum beam on) the vacuum was 3.3×10^{-5} mm Hg. The consumption of ammonia was 2.8×10^{17} mol/sec and the corresponding pumping speed was 250 litre/sec. In the usual molecular generators incorporating a freeze-out system, the stability is affected by the freeze-out conditions. The present generator is said to be free from

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S/141/60/003/006/023/025
E032/E114

A New Maser Without a Freeze-out System

these disadvantages. Acknowledgements are expressed to A.A. Mel'nikov for assistance in the experiments and to A.T. Naumov for assistance in the preparation of the beam gun. There is 1 Soviet reference.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete
(Scientific Research Radiophysics Institute, Gor'kiy University)

SUBMITTED: July 14, 1960

Card 2/2

S/141/61/004/001/018/022
E032/E314

9,2574 25958

AUTHORS: Krupnov, A.F., Naumov, A.I. and Skvortsov, V.A.

TITLE: A Sealed-off Maser with an Ion-getter Pump and Cooling

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiofizika, 1961, Vol. 4, No. 1, pp.178-179

TEXT: An ammonia maser oscillator has been developed by the present authors. It incorporates an ion-getter pump and liquid-nitrogen cooling. The maser is designed so that the pumping speed for the ammonia is 1 000 litres/sec and the pumping speeds for all the other gases is about 1 litre/sec. In order to achieve this, the ammonia is frozen out by a liquid-nitrogen trap and the remaining gases are removed by an ion-getter pump. The apparatus is shown schematically in Fig. 1. In this figure, 1 is a liquid-nitrogen-cooled dewar; 2 is the connection to a backing pump; 3 is the ion-getter pump; 4 is a getter pump; 5 is the vacuum chamber; 6 is a multichannel beam source giving a molecular beam having a divergence of 12°; 7 is a separator consisting

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A Sealed-off Maser ... 25958

of 100-mm long rods and 8 is an invar resonator, 100 mm long. The apparatus is first evacuated with a backing pump to a pressure of 10^{-2} mm Hg. Further reduction of the pressure (down to about 5×10^{-6} mm Hg) is achieved by means of cooling, a getter pump (A.G. Mishkin, Elektronika, 12, 62, 1958 - Ref. 1) and an ion-getter pump. During the operation of the device the vacuum is maintained by cooling and the ion-getter pump. The power consumed by the getter and the ion-getter pumps is 100 and 140 W, respectively. During tests the oscillator was found to operate continuously for six days. The pressure remained constant and the only external manipulation required was the addition of liquid nitrogen. It was found that the device could be restarted by introducing liquid nitrogen, switching on the getter pump and then the ion-getter pump.

L 14988-63 EWT(l)/EWT(m)/BDS/EEC(b)-2/ES(t)-2 AFFTC/ASD/RADC P1-4/
Pk-4/Po-4/Pq-4 RM/WG/JHB/EH/K/IJP(C)
ACCESSION NR: AP3004837 S/0141/63/006/003/0513/0517

AUTHOR: Krupnov, A. F.; Skvortsov, V. A.

TITLE: On a 4-mm-wave molecular generator using a formaldehyde molecular beam

SOURCE: IVUZ. Radiofizika, v. 6, no. 3, 1963, 513-517

TOPIC TAGS: formaldehyde molecular-beam maser, molecular-beam maser, beam maser, millimeter-wave-range maser, maser, Stark effect

ABSTRACT: The dipole moment, rotation constant, and other parameters of the $C^{12}H_2O^{16}$ molecule have been investigated, and the $1_{01}-1_{00}$ rotation transition at 72,838 Mc has been used for the construction of a formaldehyde beam maser in the 4-mm-wave range. The frequency stability of the maser is favorably affected by lack of a hyperfine structure. The instrument was built along the lines of a scaled-down ammonia maser with a TM_{010} cavity and a crystal-stabilized klystron serving as the radiation source. The measured output power of the generator was of the order of 10^{-11} w. Orig. art. has: 2 formulas and 3 figures.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Institute of Radio Physics at Gorkiy State University)

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L 14987-63 EWT(l)/EWT(m)/BDS/EEC(b)-2/ES(t)-2 AFFTC/ASD
RM/JHB/WG/K/EH
ACCESSION NR: AP3005251 S/0056/63/045/002/0101/0102

63
62

AUTHOR: Krupnov, A. F.; Skvortsov, V. A.

TITLE: A molecular beam maser in the 4-mm range, operating on the 1_{01}-0_{00} transition in the CH_2O molecule

SOURCE: Zhur. eksper. i teoret. fiz., v. 45, no. 2, 1963, 101-102, and illus. following p. 102

TOPIC TAGS: maser, beam maser, molecular generator, formaldehyde maser

ABSTRACT: Maser generation at 72,838 Mc, produced by the 1_{01}-0_{00} transitions in the CH_2O molecule, has been achieved. Frequency stability is enhanced by the absence of fine structure and the presence of an upper-level Stark energy maximum in the 1_{01}-0_{00} line. The power of the molecular generator is 3×10^{-11} w. An emission line produced by the 5_{14}-5_{15} transition was observed at 72,409 Mc. The Stark effect and fine structure of this line are the same as those predicted theoretically. An absorption line in the beam was observed in the 1_{01}-0_{00} transition. Orig. art. has: 2 figures.

ASSOCIATION: Institute of Radio Physics, Gor'kiy State University

Card 1/2

ACCESSION NR: AP4009141 S/0056/63/045/006/2080/2081

AUTHOR: Krupnov, A. F.:, Skvortsov, V. A.

TITLE: Four millimeter maser with Fabry-Perot resonator

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 45, no. 6, 1963, 2080-2081

TOPIC TAGS: Fabry perot maser, Fabry perot maser resonator, maser, C H sub 2 O maser, maser separator

ABSTRACT: A Fabry-Perot maser operating at 72838 Mc and using the 1_{01}--0_{00} transition of the CH_2O molecule was developed and operated. The resonator consists of two flat discs 6.5 cm in diameter, polished to within 1 micron. The separation between discs is $\lambda/2$ (about 2 mm), and the Q is 2000. Coupling is by two waveguides of like polarization. The resonator is fed with one flat beam of active molecules directed in the gap between the plates. The separator is a variant of a ring system suggested by Krupnov (Izv. vuzov Radiofizika, v. 2,

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ACCESSION NR: AP4009141

658, 1959) and operated at 15 kV. The spectral line in the resonator was observed to be a singlet about 15 kcs wide. Generation was at one frequency, with a signal to noise ratio not less than 20. 'The authors thank N. F. Shcherbakov and A. M. Kislitsyn for making the resonator and V. A. Flyagin and V. D. Kalent'yev for their assistance in building the separator.' Orig. art. has: 1 figure.

ASSOCIATION: none

SUBMITTED: 26Sep63 DATE ACQ: 02Feb64 ENCL: 01

SUB CODE: PH NO REF SOV: 004 OTHER: 002

Card 2/3

L 25133-65 EWT(1)/T JP(c)
ACCESSION NR: AP5002230 S/0141/64/007/005/0991/0992

21
2D
B

AUTHORS: Krupnov, A. F.; Skvortsov, V. A.

TITLE: On the shape of the spectral line in a molecule beam 21

SOURCE: IVUZ. Radiofizika, v. 7, no. 5, 1964, 991-992

TOPIC TAGS: maser, molecule beam, Fabry Perot interferometer, maser resonator, spectral line shape, line splitting

ABSTRACT: The authors derive the spectral line shape produced when a beam of molecules interacts with a field of arbitrary configuration and of intensity low enough to neglect saturation. This problem is of importance to masers which make use of Fabry-Perot resonators or resonators operating at higher modes, in which the microwave field is essentially inhomogeneous along the molecule trajectory. From the expression derived for the line shape it is deduced that the line can split if the resonator subtends more than one

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L 25133-65
ACCESSION NR: AP5002330

spatial period of the field. Such a splitting was observed in the 1_{01}--0_{00} radiation of the formaldehyde molecule in a maser with Fabry-Perot resonator. Orig. art. has: 1 formula.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Scientific Research Radiophysics Institute at the Gor'kiy University)

SUBMITTED: 04Jan64 ENCL: 00 SUB CODE: EC,OP

NR REF SOV: 009 OTHER: 003

Card 2/2

L 16889-65 EWG(j)/EWA(k)/FBD/EWT(l)/EEC(k)-2/EEC(t)/EEC(b)-2/T/EWP(k)/EWA(m)-2/EWA(h) Pn-4/Po-4/Pf-4/Pi-4/Pl-4/Peb IJP(c)/ASD(a)-5/BSD/AFWL/AFETR/RAEM(a)/ESD(gs)/ESD(t) WG

ACCESSION NR: AP5000304 S/0056/64/047/005/1605/1611

AUTHOR: Krupnov, A. F.; Skvortsov, V. A.

TITLE: A 4-mm maser with a Fabry-Perot type resonator

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 5, 1964, 1605-1611

TOPIC TAGS: maser, formaldehyde, formaldehyde maser, Fabry Perot resonator, oscillation mode, generation mode, maser action, Stark effect

ABSTRACT: The shape of the spectral line observed in various oscillation modes in a beam of active HCHO molecules is explained qualitatively on the basis of a study of the structure of the field in a resonator of the Fabry-Perot type. It was established that the maximum excitation parameter is obtained when the distance between the mirrors is $\lambda/2$ and the oscillation mode is that having a single maximum of the electric field. In this case, generation was obtained on the $1_{01}-0_{00}$ transition in the HCHO molecule. The Stark effect associated with this transition was studied. A peculiarity of the effect of this transition is that application of an electric field shifts the spectral-

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L 16889-65
ACCESSION NR: AP5000304

line frequency without splitting or changing the intensity. This effect makes it possible to design a maser which can be tuned to within 10^7 cps by the Stark effect. Orig. art. has: 2 figures.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gorkiy gosudarstvenny*y institut (Scientific Research Institute of Radiophysics, Gorky State University)

SUBMITTED: 28Nov63 ENCL: 00 SUB CODE: NP

NO REF SOV: 009 OTHER: 006 ATD PRESS: 3150

Card 2/2

L 36962-65 EWG(j)/EWA(k)/FBD/EWT(1)/EWT(m)/EPF(c)/EEC(k)-2/EWP(j)/EEC(t)/T/
EEC(b)-2/EWP(k)/EWA(m)-2/EWA(h) Pn-4/Pc-4/Po-4/Pf-4/Pr-4/Peb/Pi-4/Pl-4
IJP(c) WG/RM

ACCESSION NR: AP5007042 S/0120/65/000/001/0128/0132

AUTHOR: Krupnov, A. F.; Skvortsov, V. A.

TITLE: Some experimental studies of formaldehyde masers

SOURCE: Pribory i tekhnika eksperimenta, no. 1, 1965, 128-132

TOPIC TAGS: maser, formaldehyde maser

ABSTRACT: Some results are reported of an investigation of a stable-frequency 4-mm maser operating on 1_{01}-0_{00} transition of the formaldehyde molecule. The ninth harmonic of a quartz-phase-AFC-stabilized klystron was used as the signal; the hookup permitted a continuous monitoring of the gain of the unexcited maser. Hence, a numerical evaluation of the number of active molecules under various conditions was possible. Polyform (a pure polymer of the polyhydroxymethylene class) was used as a source of formaldehyde because it did not contaminate the Dewar vessels. To increase the population of the 1_{01}-0_{00} levels, the beam source was kept at -60C; at a still lower temperature, formaldehyde condensation took place, and the beam was very stable. A sorting system described elsewhere by

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L 36962-65
ACCESSION NR: AP5007042

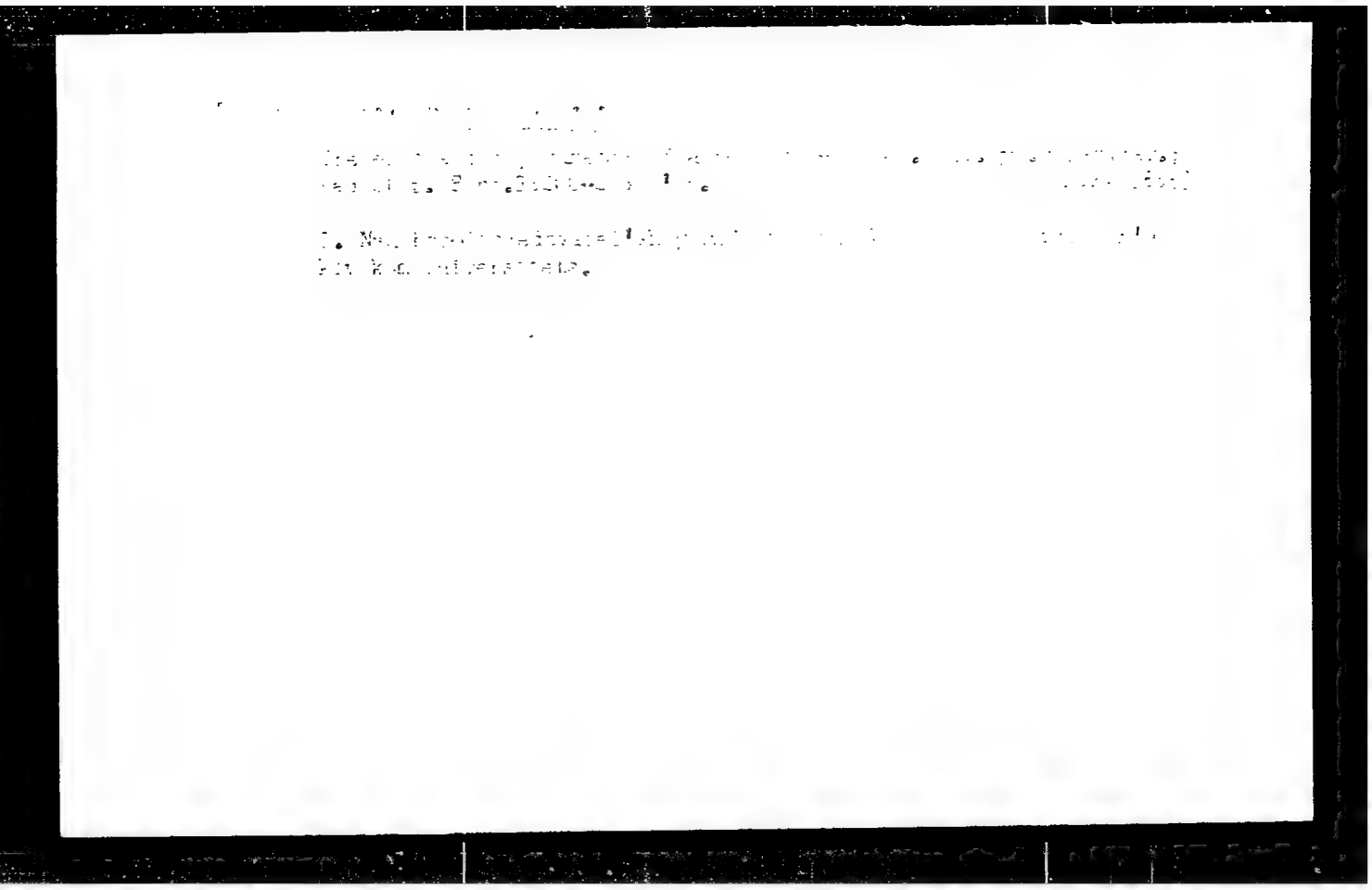
the authors produced a wide flat beam of active molecules for a Fabry-Perot resonator; the system yielded three times as many active molecules as the conventional quadrupole system would have produced. The Fabry-Perot resonator comprised two 6.5-mm-diameter plane parallel brass mirrors polished within 1 μ. The frequency of the above transition proved to be 72838.0 Mc. Also, the 5_{14}-5_{15} line of formaldehyde with a frequency of 72409 Mc was tested. Orig. art. has: 2 figures and 1 table. [03]

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri GGU (Scientific Research Radio Physics Institute at GGU)

SUBMITTED: 19Dec63 ENCL: 00 SUB CODE: EC

NO REF SOV: 008 OTHER: 004 ATD PRESS: 3221

Card 2/2



L 32252-65 EWG(j)/EWA(k)/FBD/EWT(1)/EEC(k)-2/EEC(t)/T/EEC(b)-2/EWP(k)/EWA(m)-2/EWA(h) Pf-4/Pi-4/Pl-4/Pn-4/Po-4/Peb IJP(c) WG

ACCESSION NR: AP5005360 S/0109/65/010/002/0378/0379

AUTHOR: Krupnov, A. F.; Skvortsov, V. A. 54

TITLE: On the problem of sorting molecules in a beam maser 25 B

SOURCE: Radiotekhnika i elektronika, v. 10, no. 2, 1965, 378-379

TOPIC TAGS: maser, beam maser, molecular sorting, sorting system, quadrupole sorting system, ring sorting system

ABSTRACT: A ring and a quadrupole sorting system were investigated to determine which was more expedient for utilization in beam masers. A beam maser without diaphragms which had a cavity for E_{010} oscillations was used in the experiment. Both sorting systems were 2 mm in diameter and 17 mm in length, and the field intensities produced were approximately equal. The effectiveness of the systems was determined by the parameter of maximal maser excitation η. Measurements were made at various distances d between the end of the sorting system and the cavity. Parameter η was 0.55 at d = 2.5 mm and 0.6 at d = 17 mm for the quadrupole system and 0.5 and 0.7 at the same values of d for the ring system. At a length of 45 mm, maser generation was approximately the

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L 32252-65

ACCESSION NR: AP5005160

same in both systems, which demonstrates the practically identical effectiveness of the two systems. Further analysis led to the conclusion that the effectiveness of sorting does not depend on the direction of the field in the sorting system but on the direction of the sorted molecular beam in relation to the cavity field vector. Orig. art. has: 1 formula. [DW]

ASSOCIATION: none

SUBMITTED: 01Feb64 ENCL: 00 SUB CODE: EC

NO REF SOV: 008 OTHER: 001 ATD PRESS: 3202

Card 2/2

L 41018-66 EWT(1)/EEC(k)-2/EWP(k)/T/FSD IJP(c) WG
ACC NR: AP6026940 SOURCE CODE: UR/0141/66/009/004/0824/0827

AUTHOR: Krupnov, A. F.; Skvortsov, V. A. 47 B

ORG: Scientific-Research Institute of Radiophysics, Gor'kiy University (Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete)

TITLE: Increasing the beam length in a maser with spaced resonators 25

SOURCE: IVUZ. Radiofizika, v. 9, no. 4, 1966, 824-827

TOPIC TAGS: maser, gaseous state maser

ABSTRACT: Practical methods of increasing the maser beam length, i.e., of enhancing the line Q-factor, were investigated. Various schemes of formation of a long-beam of active molecules were tested. The maximum distance between the sorting system and the single resonator at which the self-excitation was still possible served as an efficiency criterion. A maser with J = 3, K = 3, $N^{14}H_3$ was used in the experiments. A 0.15-mm diameter channel whose length was equal to its diameter was used as a beam source. The sorting system 100-mm long, 6-mm diameter consisted of rings with 3-mm spacings between them. For E_{010}-mode, the 100-mm long resonator had a Q-factor of about 9000. Generation was obtained with a distance of 70 cm between the sorting system and the single resonator. The optimal distance between the source and the sorting system proved to be 19 mm. A 0.5-mm deviation of the source from the sorting-system axis halved the excitation parameter, which testified to

UDC: 621.378.33

Card 1/2

L 11018-66

ACC NR: AP6026940

the fact that larger beam diameters should not have been used. These results corroborate G. Becker's results (Zs. angew. Phys., 1963, 15, 281) about the advantages of the point sources and ring sorting systems whose field is independent of the azimuth and which ensures the absence of "azimuth aberrations" in forming the active-molecule beam. F. Holuj's et al. conclusions about a partial structure resolution with an interresonator distance of 30-cm based on a certain asymmetry in the amplitude-frequency maser characteristics is held premature; this asymmetry could be due to some technical factors. A radiation line was observed by the authors with a 2-mm distance between the resonators; this line was completely resolved into two components separated by 1586 ± 80 cps. Orig. art. has: 3 figures and 1 table. [03]

SUB CODE: 20 / SUBM DATE: 24Jan66 / ORIG REF: 009 / OTH REF: 005 / ATD PRESS: 5159

Card 2/2 hs

L 11017-66 EWT(l)/EWT(m)/EEC(k)-2/EWP(j)/EWP(k)/T/FBD IJP(c) RM/WG/DS
ACC NR: AP6026941 SOURCE CODE: UR/0141/66/009/004/0827/0828

AUTHOR: Krupnov, A. F.; Skvortsov, V. A.

53,5

ORG: Scientific-Research Institute of Radiophysics, Gor'kiy University (Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete)

TITLE: Reorientation of molecules in a formaldehyde beam maser

SOURCE: IVUZ. Radiofizika, v. 9, no. 4, 1966, 827-828

TOPIC TAGS: maser, liquid state maser, gaseous state maser

ABSTRACT: Reorientation processes in a formaldehyde $1_{01} \rightarrow 0_{00}$-transition maser were experimentally investigated. Only the molecules having $M = 0$ interact with an E_{010} field when they enter the resonator. When a reorienting field is superposed, the transitions $M = 0 \rightarrow M = \pm 1$ and $M = \pm 1 \rightarrow M = 0$ will take place with equal probabilities, and the excitation parameter will decrease. The excitation parameter was found to decrease to one third at 100% reorientation. A small ring encompassing the molecular beam was placed between the ring-type sorting system and the E_{010}-mode resonator and served as a weak-field-creating electrode; the maser was operated as an amplifier; the excitation parameter and the ring voltage were measured. With the same sorting system, source, and reorienting ring, experiments were conducted with $N^{14}H_3$ maser, $J = 3$, $K = 3$. In this case, the effect of ring voltage on the excitation

Card 1/2 UDC: 621.378.33

L 41017-66
ACC NR: AP6026941

parameter was very weak (about 1%). Thereupon, additional experiments were staged with an outfit described by N. G. Basov et al. (ZhETF, 1963, 45, 1768); the maximum variation of the excitation parameter was found to be about 20%, which is substantially lower than that in the formaldehyde maser. Orig. art. has: 2 figures. [03]

SUB CODE: 20 / SUBM DATE: 24Jan66 / ORIG REF: 002/ ATD PRESS: 5059

Card 2/2

ACC NR: AP7008267 SOURCE CODE: UR/ 141/67/010/001/0140/0142

AUTHOR: Krupnov, A. F.; Skvortsov, V. A.; Sinegubko, L. A.

ORG: Scientific Research Radiophysics Institute of the Gor'ky University (Nauchno-issledovatel'skiy institut pri Gor'kovskom universitete)

TITLE: The optimal variant of a two-resonator maser with opposing beams

SOURCE: IVUZ. Radiofizika, v. 10, no. 1, 1967, 140-142

TOPIC TAGS: maser, gaseous state maser, ammonia, Q factor, resonator Q factor, spectral line, maser beam

ABSTRACT: The authors studied the optimal configuration and the limiting gain advantage in the effective Q-factor of the narrowed spectral lines in Ramsey maser circuits with distributed resonators and opposing beams. The gain advantage was determined as the ratio of the effective Q-factor of the spectral line in a two-resonator circuit to the Q-factor of the spectral line in a generator with a single resonator. An experiment was performed to determine the dependence of $X(\ell)$ (beam attenuation coefficient as a function of the length of the resonator) with a maser operating on the 3-3 transition of ammonia $N^{14}H_3$. Above, $X(\ell) = N(\ell)/N(0)$, where $N(0)$ is the number of active molecules arriving from the sorting system of the first resonator, and $N(\ell)$ the number of molecules that reach the second resonator. The relationship of the number of active molecules $N(\ell)$ reaching the single resonator from a sorting system placed at a distance ℓ from the resonator, to the number of molecules $N(0)$ reaching the resonator placed next to the sorting system ($\ell = 0$) was

Card 1/2 UDC: 621.378.3

ACC NR: AP7008267

also measured. When both these measurements were made the power gain K(ℓ), K(0) of the non-excited maser was measured for a constant beam intensity and sorting voltage. Fig. 1 (a plot of X vs. ℓ) shows some of the results obtained. By using the experimentally obtained dependence of X(ℓ) , for example, the maximum possible gain advantage of the effective line Q-factor of a two-resonator over a single (10 cm long)

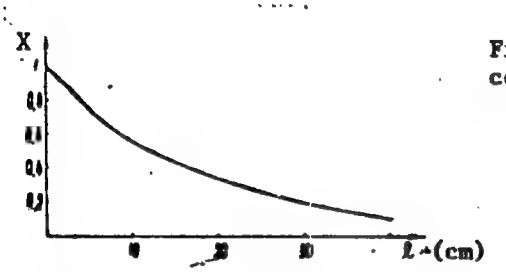


Fig. 1. Dependence of the beam attenuation coefficient on the length of the resonator

resonator maser was calculated. This gain advantage, which equalled 3.5, corresponded to ℓ = 27 cm. The authors thank B. V. Goromov and Yu. I. Nikolayeva for their help in the experiment. Orig. art. has: 2 figures. [IV]

SUB CODE: 20/ SUBM DATE: 20Jun66/ ORIG REF: 005/

Card 2/2

16(1)

AUTHOR: Skvortsov, V.A.

SOV/20-127-5-10/58

TITLE: Interrelation Between the Denjoy General Integral and Totalization $(T_{2s})_o$

PERIODICAL: Doklady Akademii nauk SSSR,1959,Vol 127,Nr 5,pp 975-976 (USSR)

ABSTRACT: By constructing an example the author proves the existence of a function f(x) with the following properties : 1.) f(x) is integrable in the sense of the general Denjoy integral, of the integral of Marcinkiewicz - Zygmund [Ref 2], of the P^2 - integral of James [Ref 3] and of the SCP - integral of Burkill [Ref 4] . 2.) The general Denjoy integral of f(x) is different from the integral of the same function in the sense of the totalization $(T_{2s})_o$ and in the sense of the other above integrals of Perron type. Simultaneously it is shown that the totalization $(T_{2s})_o$ and the above integrals of Perron type do not necessarily possess the N - property of Luzin.

Card 1/2

Interrelation Between the Denjoy General Integral and Totalization $(T_{2s})_o$ SOV/20-127-5-10/58

There are 6 references, 1 of which is Soviet, 1 French, 1 Polish, 1 Canadian, 1 English, and 1 American.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova (Moscow State University imeni M.V. Lomonosov)

PRESENTED: April 27,1959, by A.N. Kolmogorov, Academician

SUBMITTED: April 27,1959

Card 2/2

85940

S/039/60/052/001/002/009 XX
C111/C222

16.2600

AUTHOR: Skvortsov, V.A. (Moscow)

TITLE: Relations Between the General Denjoy Integral and the Totalization $(T_{2S})_o$

PERIODICAL: Matematicheskiy sbornik, 1960, Vol. 52, No . 1,pp. 551-578

TEXT: There exist several generalizations of the Lebesgue integral integrating each sum of an everywhere convergent trigonometric series. To these generalizations there belongs the totalization $(T_{2S})_o$ (cf.(Ref. 1)) introduced by Denjoy as well as the integrals of the type of Perron: The integral of Marcinkiewicz-Zygmund (cf.Ref.2)), the P^2 - integral of James (cf.(Ref. 3)) and the SCP - integral of Burkill (cf.(Ref. 4)). At the other hand there exists the general Denjoy integral. The author investigates the relations between this integral and the integrals mentioned above. It is proved that the totalization $(T_{2S})_o$ and the above mentioned Perron integrals contradict the general integral of Denjoy. For the proof the author constructs a function f(x) integrable in the sense of the Denjoy integral as well as in the sense of the other integrals mentioned

Card 1/ 2

SKVORTSOV, V.A.

Relationship between a D-integral and totalization (T_{2_B}).
Vest. Mosk. un. Ser. 1:Mat., mekh. no.6:20-25 N-D '62.
(MIRA 16:2)

1. Kafedra teorii funktsiy i funktsional'nogo analiza Moskovskogo universiteta.
(Integrals, Generalized)
(Functions)

SKVORTSOV, V.A.

Trigonometrical series convergent to nonnegative functions.
Vest. Mosk. un. Ser.1: Mat.,mekh. 17 no.5:3-10 S-O '62.
(MIRA 15:9)

1. Kafedra teorii funktsiy i funktsional'nogo analiza Moskovskogo universiteta.
(Fourier series)
(Functions)

SKVORTSOV, V.A. (Moskva)

Some properties of the Cesaro–Perron integral. Mat. sbor. 60 no.3: 304-324 Mr '63. (MIRA 16:3)

(Integrals, Generalized)

SKVORTSOV, V.A.

A Cantor type theorem for Haar's system. Vest. Mosk. un. Ser. 1: Mat., mekh. 19 no.5:3-6 S-O '64. (MIRA 17:12)

1. Kafedra teorii funktsii i funktsional'nogo analiza Moskovskogo universiteta.

SKVORTSOV, V.A. (Moskva)

Integration of an exact asymptotic Schwarz derivative. Mat. sbor. 63 no.3:329-340 Mr '64. (MIRA 17:4)

SKVORTSOV, V.A.

Du-Bois-Reymond's theorem for generalized integrals and trigonometric series summable by Abel-Poisson's method. Vest. Mosk. un. Ser. 1: Mat., mekh. 19 no.4:16-20 Jl-Ag '64. (MIRA 17:8)

1. Kafedra teorii funktsiy i funktsional'nogo analiza Moskovskogo universiteta.

L 53018-65 EWA(k)/FBD/EWG(r)/EWT(l)/EEC(k)-2/EEC(t)/T/EEC(b)-2/EWT(k)/EWA(h)/
EWA(m)-2 Pm-4/Pn-4/Po-4/Pf-4/Peb/Pi-4/Pl-4 SCTB/LJP(c) WG
ACCESSION NR: AP5010091 UR/0141/65/008/001/0200/0203

AUTHOR: Krupnov, A. F.; Skvortsov, V. A.

TITLE: On the excitation parameter of a beam maser

SOURCE: IVUZ. Radiofizika, v. 8, no. 1, 1965, 200-203

TOPIC TAGS: beam maser, formaldehyde maser, excitation parameter

ABSTRACT: The authors estimate quantitatively the influence of collisions in a maser beam on the value of the maximum attainable excitation parameter. The obtained results are compared with experimental data for a formaldehyde maser, data for which were presented by the authors earlier (Izv. vyssh. uch. zav. - Radiofizika v. 6, 513, 1963; ZhETF v. 45, 101, 1963). The dependence of the excitation parameter on the molecule flux and on the length of the sorting system is also obtained with collisions taken into account. Plots are presented of the variation of the excitation parameter with the sorting voltage, the source temperature, the length of the sorting system, and the beam intensity. The agreement between the theoretical calculations and the experiments is satisfactory, but it is expected that the absolute value of the excitation parameter estimated in the paper would

Card 1/2

L 53018-65

ACCESSION NR: AP5010691

be exaggerated because no account was taken of the technical and structural factors which limit the excitation parameter. Orig. art. has: 4 figures and 1 formula.

ASSOCIATION: Nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom universitete (Radiophysics Scientific Research Institute at the Gor'kiy University)

SUBMITTED: 21Feb64 ENCL: 00 SUB CODE: EC

NR REF SOV: 008 OTHER: 001

Card 2/2

SAVORSKOV, V. D.

27192 SAVORSKOV, V. D. , KOLNOV, V. P. - Preduprezhdenie Vypadeniya Khoroshego Volokna V Ugary. Tekstil Prom-St: 1949, No. 8, s. 30-31.

SO: Letopis' Zhurnal'nykh Statey, Vol. 36, 1949.

KASHUBA, B.P.; DONDE, V.N.; ZELIKOVSKIY, L.M.; KARMAZIN, E.I.; KUT'KOV, G.M.; LINCHEVSKIY, V.V.; OGIY, G.Ye.; SEPITYY, V.T.; SKVORTSOV, V.F.; BANNIKOV, S.A., red.; PESTRYAKOV, A.I., red.; BALIOD, A.I., tekhn. red.; GUREVICH, M.M., tekhn. red.

[The T-75 tractor; design and operation] Traktor T-75; ustroistvo i ekspluatatsiia. Moskva, Izd-vo sel'khoz. lit-ry, zhurnalov i plakatov, 1961. 335 p. (MIRA 15:2)
(Tractors)

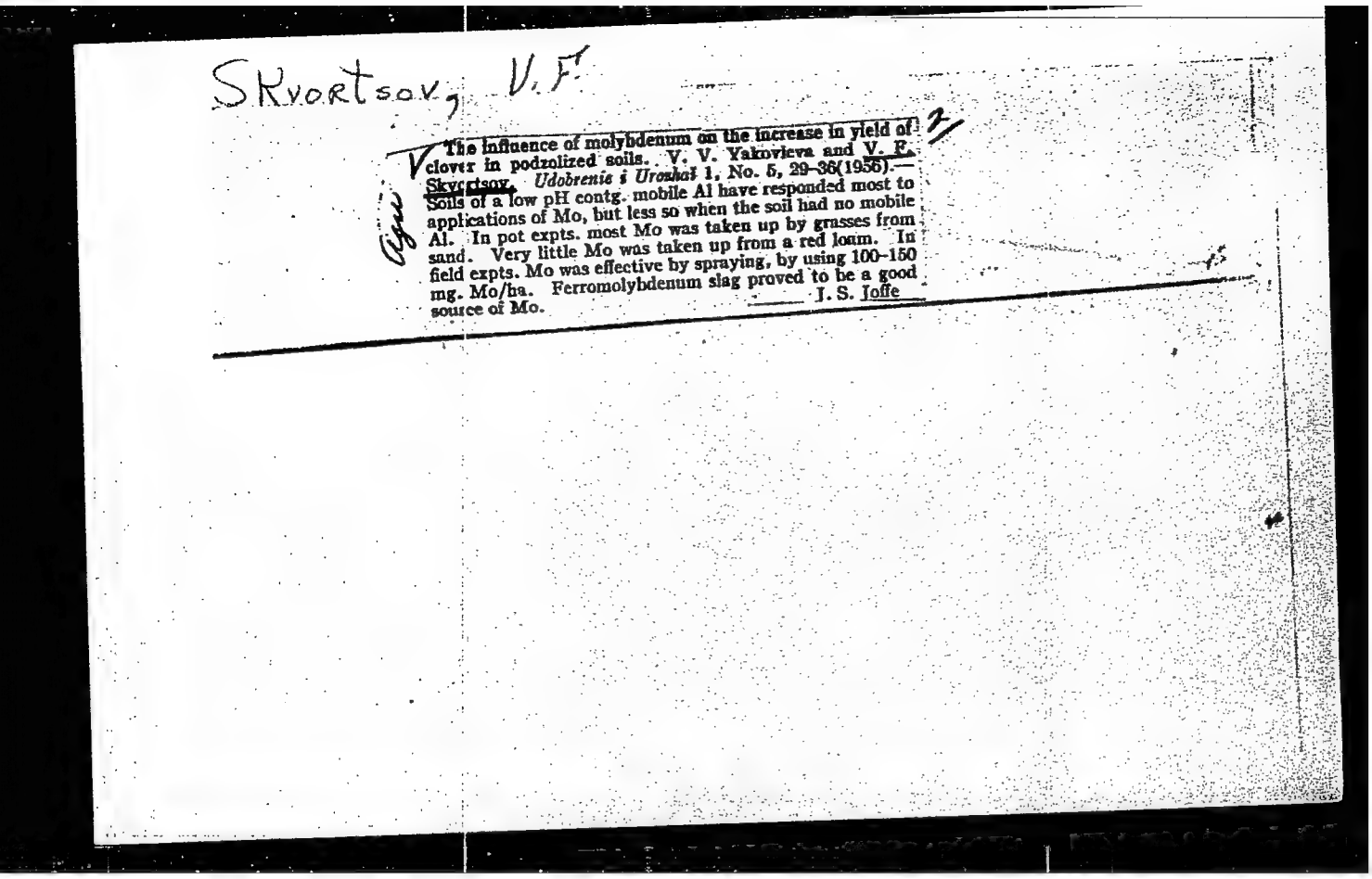
[illegible], V. V.

2'489 Dispersnost' pochvy i faktory yeye opredelyayushchiye. Trudy vsesoyuz. Nauch-Issled. In-ta udobreniy, agrotekhniki i agropochvovedeniya im. Gedroytsa, vyp 29, 1949, s. 218-30. Bibliogr: 22 nazv.

SO: LETOPIS' No. 31, 1949

SKVORTSOV, V.F.

Effectiveness of liming in relation to soil acidity. Sovet. Agron. 11, No.1, 37-42 '53. (MLRA 5:12)
(CA 47 no.14:7143 '53)



Skvortsov, V. F.

The influence of molybdenum on the increase in yield of clover in podzolized soils. V. V. Yakovleva and V. F. Skvortsov. *Udobrenie i Urozhai* 1, No. 5, 29–36(1956).—Soils of a low pH contg. mobile Al have responded most to applications of Mo, but less so when the soil had no mobile Al. In pot expts. most Mo was taken up by grasses from sand. Very little Mo was taken up from a red loam. In field expts. Mo was effective by spraying, by using 100–150 mg. Mo/ha. Ferromolybdenum slag proved to be a good source of Mo. ——— J. S. Joffe

USSR / Cultivated Plants. Grains. M-2

Abs Jour: Ref Zhur-Biol., No 6, 1958, 24953

Author : Mosolov, I. V., Dmitriyeva, N. A., Skvortsov, V. F.
Inst : The All-Union S.R.I. of Fertilizers and Agricultural Soil Science
Title : The Effect of Various Forms of Nitrogen Fertilizers on the Winter Wheat Yield in Relation to Application Time

Orig Pub: Byul. nauchn.-tekhn. inform. Vses. n.-i. in-t udob. i agropochvoved., 1956, No 2, 32-33

Abstract: No abstract.

Card 1/1

21

Skvortsov V.F.

USSR/Soil Science. Mineral Fertilizers. I-5

Abs Jour: Referat Zh-Biol., No 6, 25 March, 1957, 22509

Author : Yakovlova, V.V., Skvortsov, V.F.
Inst :
Title : The Effect of Molybdenum on Clover Yield Increase on Podzol Soils.

Orig Pub: Udobrenie i urozhai, 1956, No 5, 29-36

Abstract: Preliminary vegetative experiments proved that Mo is strongly held by acid soils (red earths and podzol). In 1954 field tests and 1955 production tests, non-root nutrition of clover by Mo in the form of ammonium molybdate (0.15 g Mo/100 l water/hectare) and liming of acid soil increased Mo assimilation by plants and acted favorably on their yield, bringing an increase of hay crop in the second harvest of 4.3 centners/hectare when the control yield was 22.4 centners/hectare. In the experiment in 1955, when

Card : 1/2

Abs Jour: Referat Zh-Biol., No 6, 25 March, 1957, 22509

the control yield was quite high, the Mo feeding showed no effect. In the production experiment, the hay crop of the second harvest obtained was 32.1 centners/hectare against 15.7 centners/hectare in the control. With molybdenum feeding (150 g/hectare) the qualitative composition of hay was improved by the yield of clover, and decreased weed content. The Mo dosage recommended for non-root feeding is 150 g/hectare. In vegetative experiments the effectiveness of a ferromolybdenous slag from Chelyabinsk plant was higher than that of ammonium molybdate when added to the soil.

M-2

USSR / Cultivated Plants. Grains.

Abs Jour: Ref Zhur-Biol., No 6, 1958, 24952

Author : Mosolov, I. V., Dmitriyeva, N. A., Skvortsov, V. F.
Inst : The All-Union Inst. of Fertilizers, Soil Science, and Agricultural Engineering
Title : The Effect of Various Forms of Nitrogen Fertilizers on the Winter Wheat Yield

Orig Pub: Udobreniye i urozhay, 1956, No 10, 42-43

Abstract: The laboratory of Plant Nutrition of the All-Union Institute of Fertilizers, Soil Science, and Agricultural Engineering experimented on the effect of various forms of nitrogen in spring and autumn side-dressings. The soil was heavy loam, subjected to average cultivation, its pH was 4.6, the hydrolitic acidity 3.85 milliequivalents per 100 grams of soil. In the 1954 tests with a damp fall the

Card 1/2

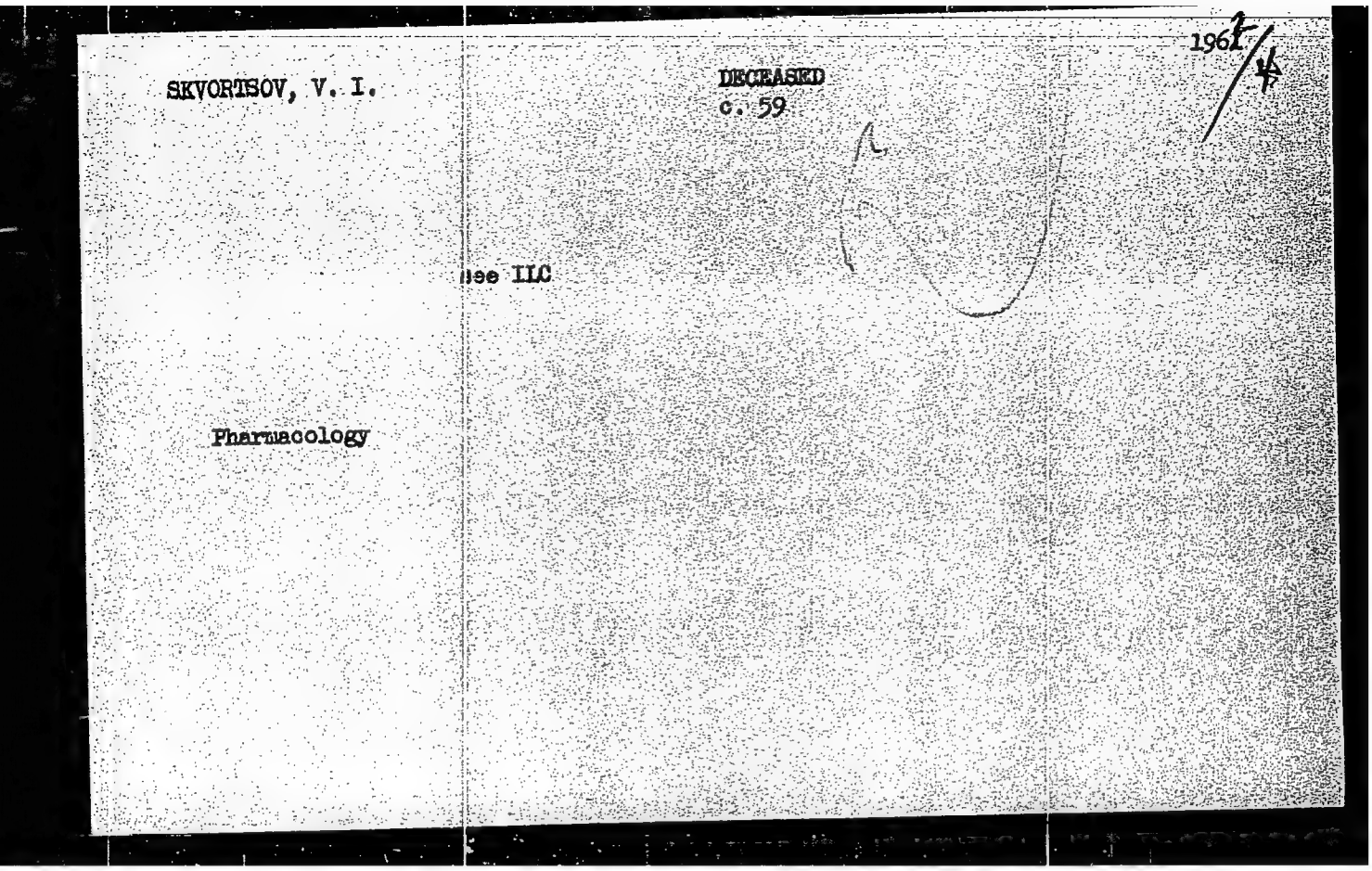
SKVORTSOV, V.F., kandidat sel'skokhozyaystvennykh nauk.

Molybdenum fertilizers. Nauka i zhizn' 23 no.7:51-52 Jl '56.
(Fertilizers and manures)(Molybdenum organic compounds)(MLRA 9:9)

IOZ/N. M.N.; SAVCHTSOV, V.G.

Wintering of bats in Moldavia. Zool. zhur. 44 no.6:941-943 '65.
(MIRA 18:10)

1. Institut zoologii AN Moldavskoy SSR, Kishinev.



SKVORTSOV, V. I.

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Pharmacology

37 961
S/057/62/032/004/007/017
B162/B102

9,2571

AUTHORS: Mash, D. I., and Skvortsov, V. I.

TITLE: Frequency dependence of the components of the magnetic tensor and of the complex dielectric constant of some ferrites in the shf range

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 4, 1962, 435-440

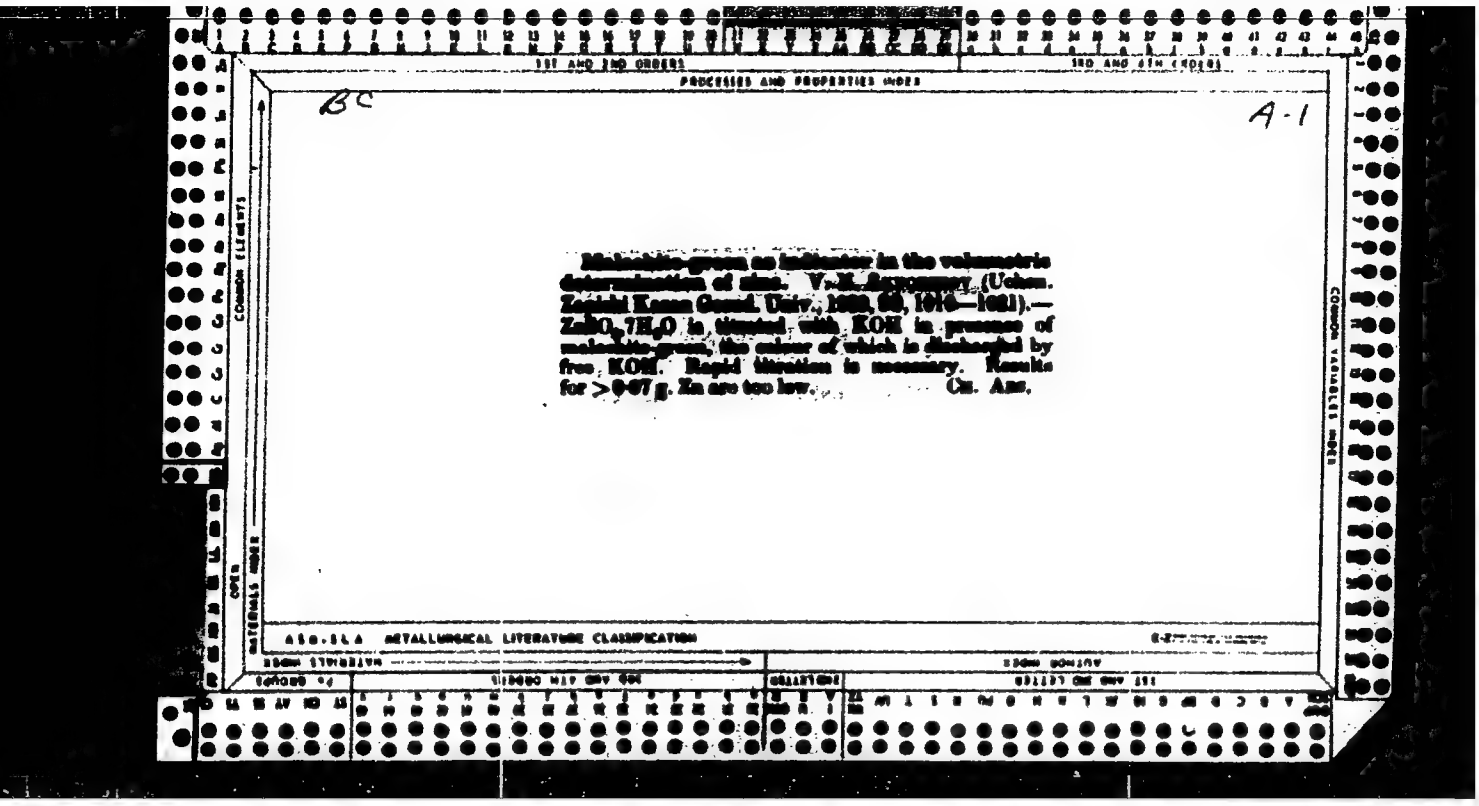
TEXT: Measurements were made of $\varepsilon = \varepsilon' + i\varepsilon''$ and an investigation was carried out into the dependence of the components ($\mu = \mu' + i\mu''$) of the tensor of magnetic permeability, $\hat{\mu}$ on the magnetizing field for ferrite of type 191 on a 0.8 cm wave and for the types Ф-1000 (F-1000) and Ф-20 (F-20) and 76 on 3 cm and 8 mm. Relations are given linking the variation in the complex natural frequency of the resonator when a thin ferrite plate is placed in its cavity. Conclusions: The ε-values measured at 3 and 0.8 cm, coincide within the limits of accuracy (no dispersion in this frequency range). The μ-values of non-magnetized ferrites differ at 3 cm and 8 mm ($\mu' \approx 0.6$-0.4, $\mu'' \approx 10^{-2}$; $\mu' \approx 1$, $\mu'' \approx 10^{-3}$). The relation between the components of $\hat{\mu}$ of the ferrites examined and the constant

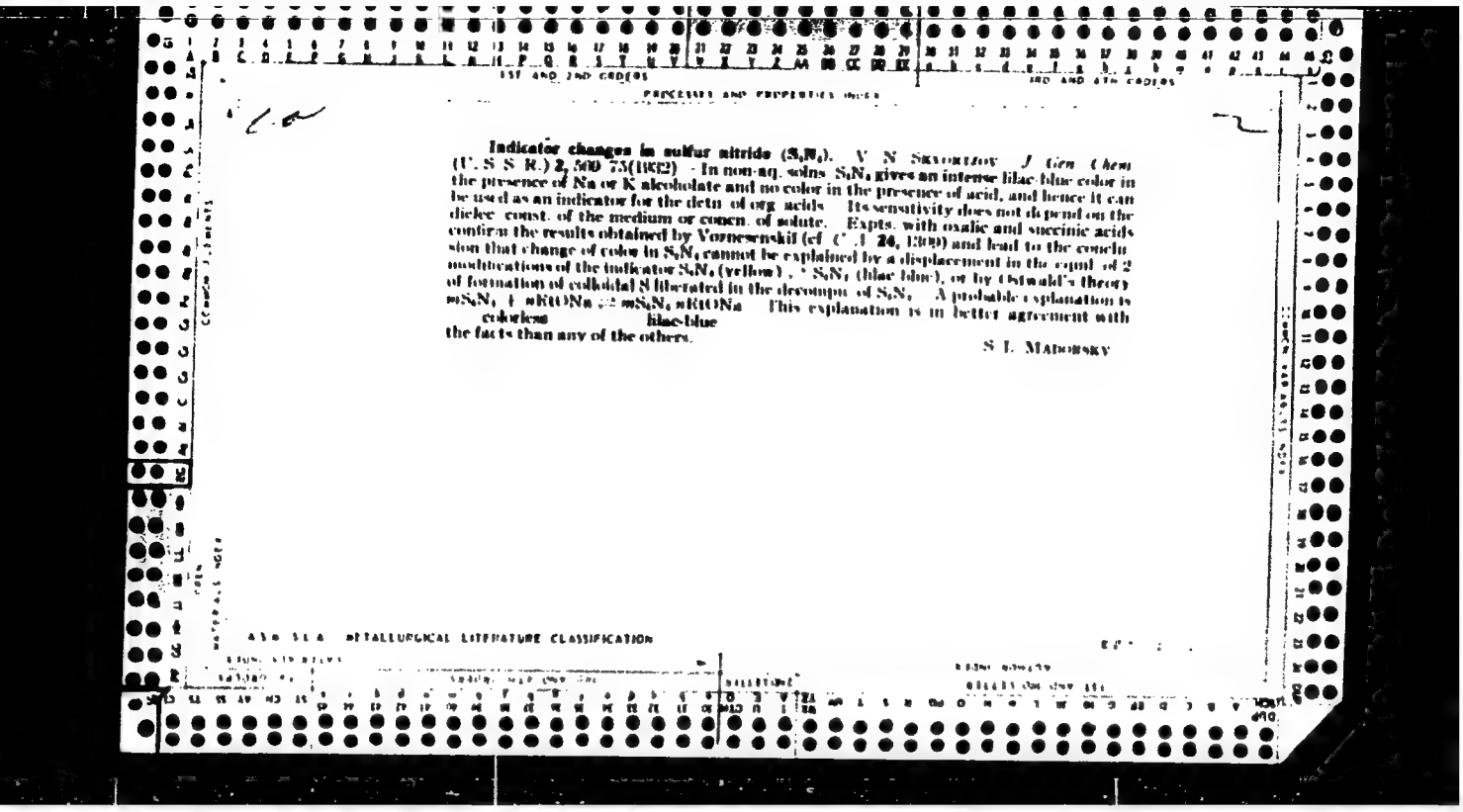
Card 1/2

GUTENEV, Yu.V., inzh.; SVERDLIN, V.M., inzh.; SEVORTSOV, V.M., inzh.

Automation of load-carrying cableways at the Tyrny-Auz Combine. Gor. zhur. no.9:48-50 S '64. (MIRA 17:12)

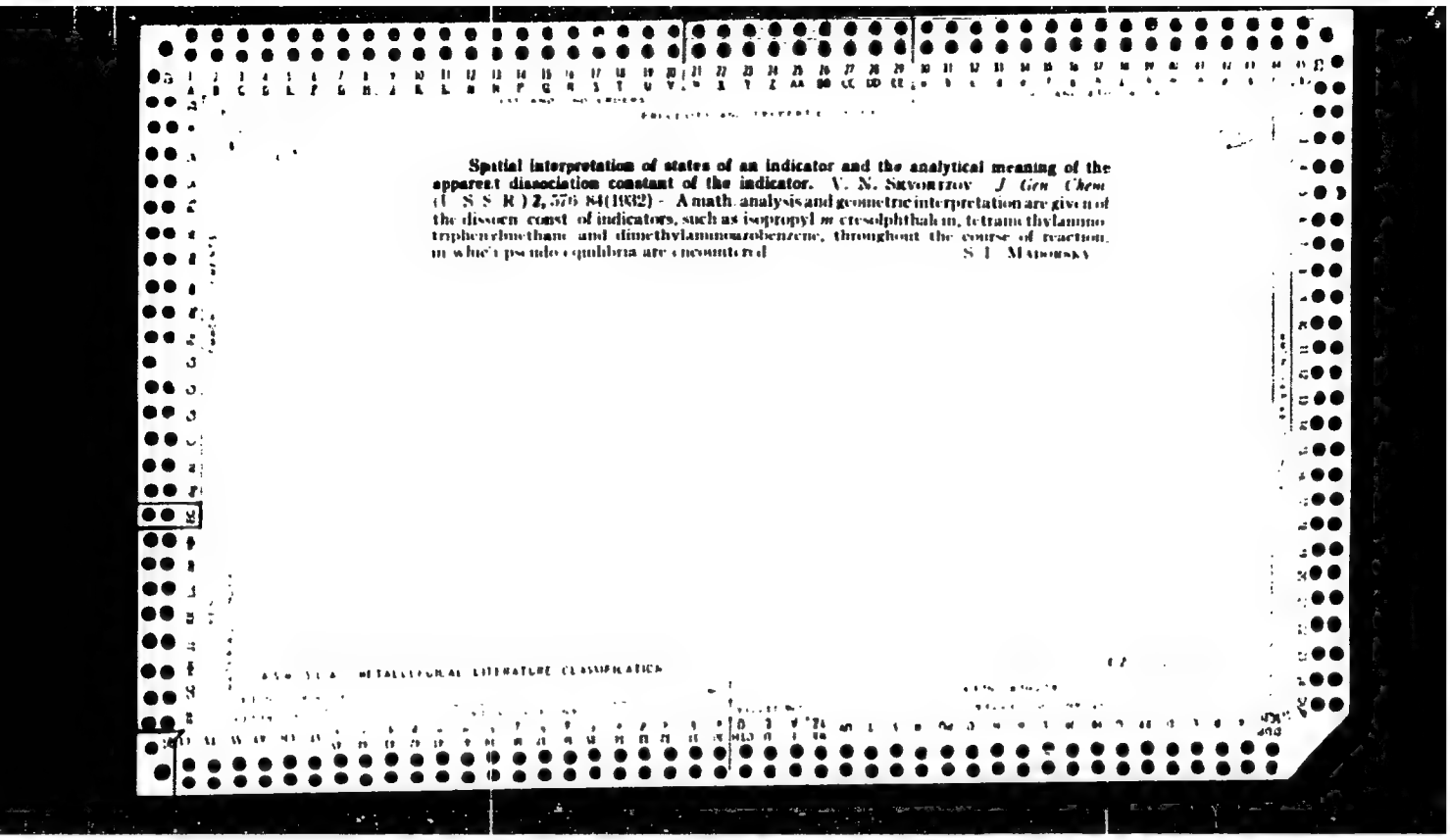
1. Leningradskiy institut Proyektavtomatika.



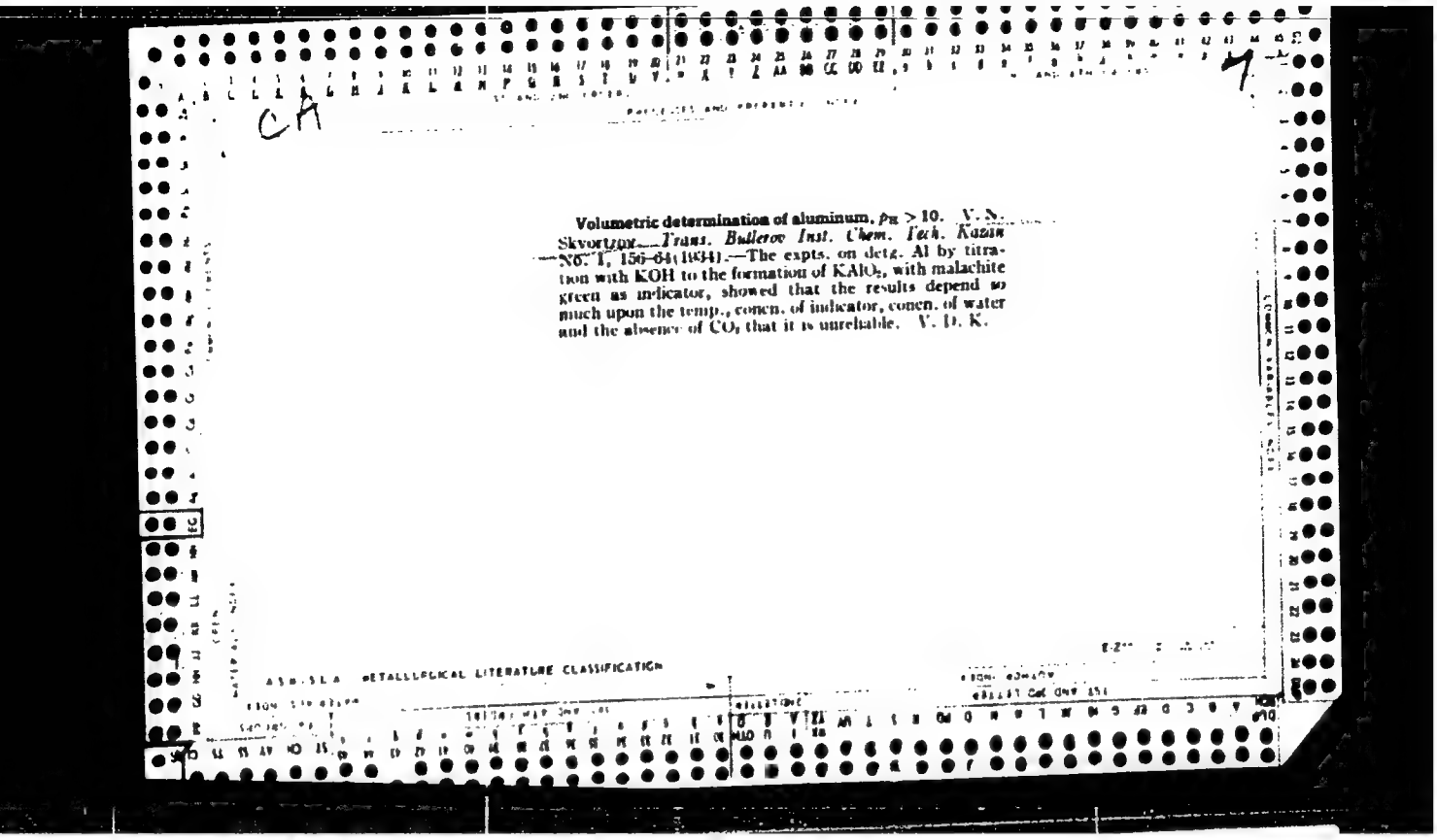


Indicator changes in sulfur nitride (S_4N_4). V. N. Skvortzov. *J. Gen. Chem.* (U. S. S. R.) **2**, 500-75(1932). - In non-aq. solns. S_4N_4 gives an intense lilac-blue color in the presence of Na or K alcoholate and no color in the presence of acid, and hence it can be used as an indicator for the detn. of org. acids. Its sensitivity does not depend on the dielec. const. of the medium or concn. of solute. Expts. with oxalic and succinic acids confirm the results obtained by Vorneenskii (cf. *C. A.* **24**, 1300) and lead to the conclusion that change of color in S_4N_4 cannot be explained by a displacement in the equil. of 2 modifications of the indicator S_4N_4 (yellow), α-S_4N_4 (lilac blue), or by Ostwald's theory of formation of colloidal S liberated in the decompn. of S_4N_4. A probable explanation is $mS_4N_4 + nROONa \rightleftarrows mS_4N_4 \cdot nROONa$ This explanation is in better agreement with
colorless lilac-blue
the facts than any of the others.

S. L. Madorsky



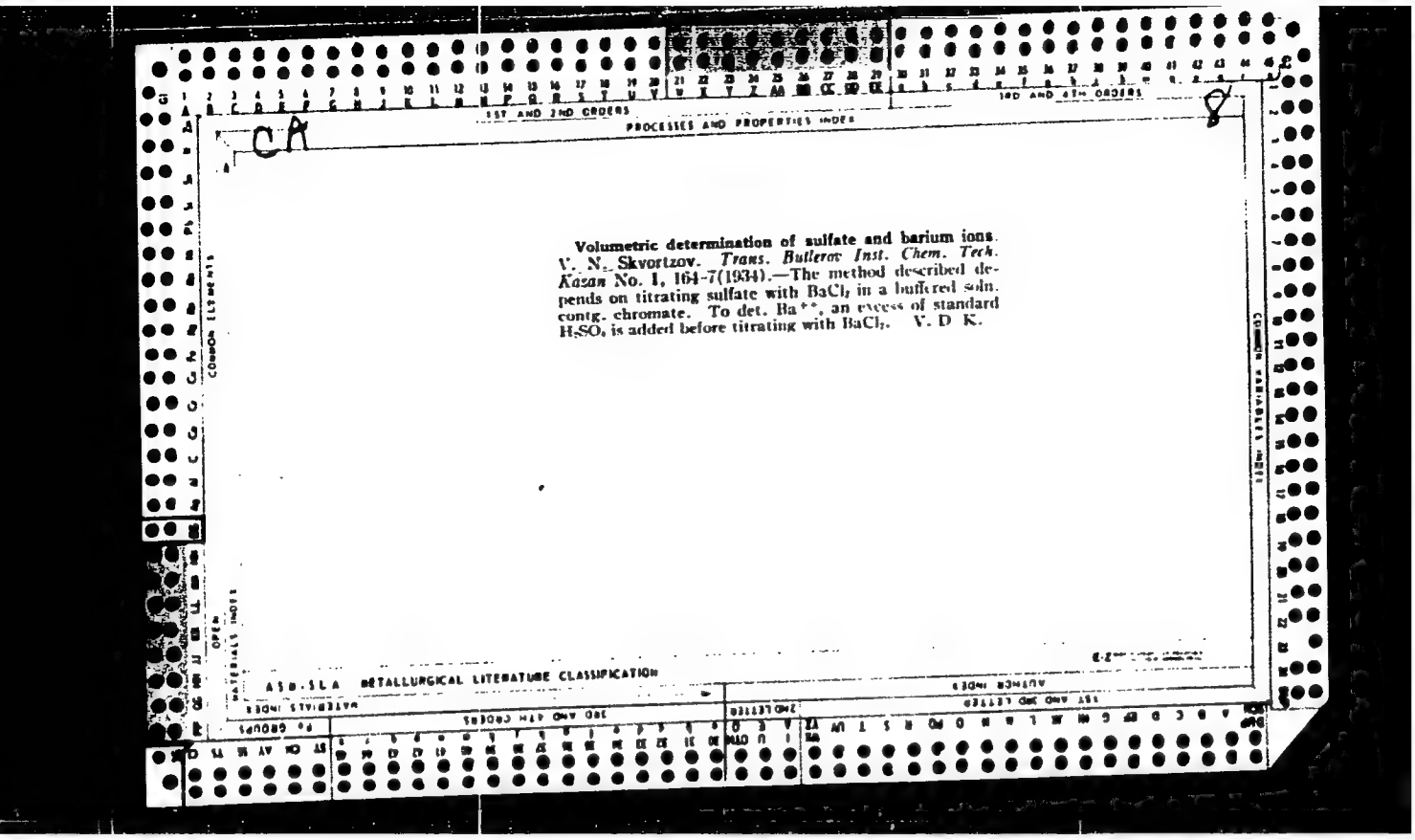
Spatial interpretation of states of an indicator and the analytical meaning of the apparent dissociation constant of the indicator. V. N. Savostyanov. *J. Gen. Chem. (U.S.S.R.)* **2**, 576-84 (1932).—A math. analysis and geometric interpretation are given of the dissocn. const. of indicators, such as isopropyl *m*-cresolphthalein, tetramethylammotriphenylmethane and dimethylaminoazobenzene, throughout the course of reaction, in which pseudo-equilibria are encountered. S. I. Manovsky



CA

Volumetric determination of aluminum. $p_H > 10$. V. N. Skvortzov.—*Trans. Butlerov Inst. Chem. Tech. Kazan* No. 1, 156–64 (1934).—The expts. on detg. Al by titration with KOH to the formation of $KAlO_2$, with malachite green as indicator, showed that the results depend so much upon the temp., concn. of indicator, concn. of water and the absence of CO_2 that it is unreliable. V. D. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



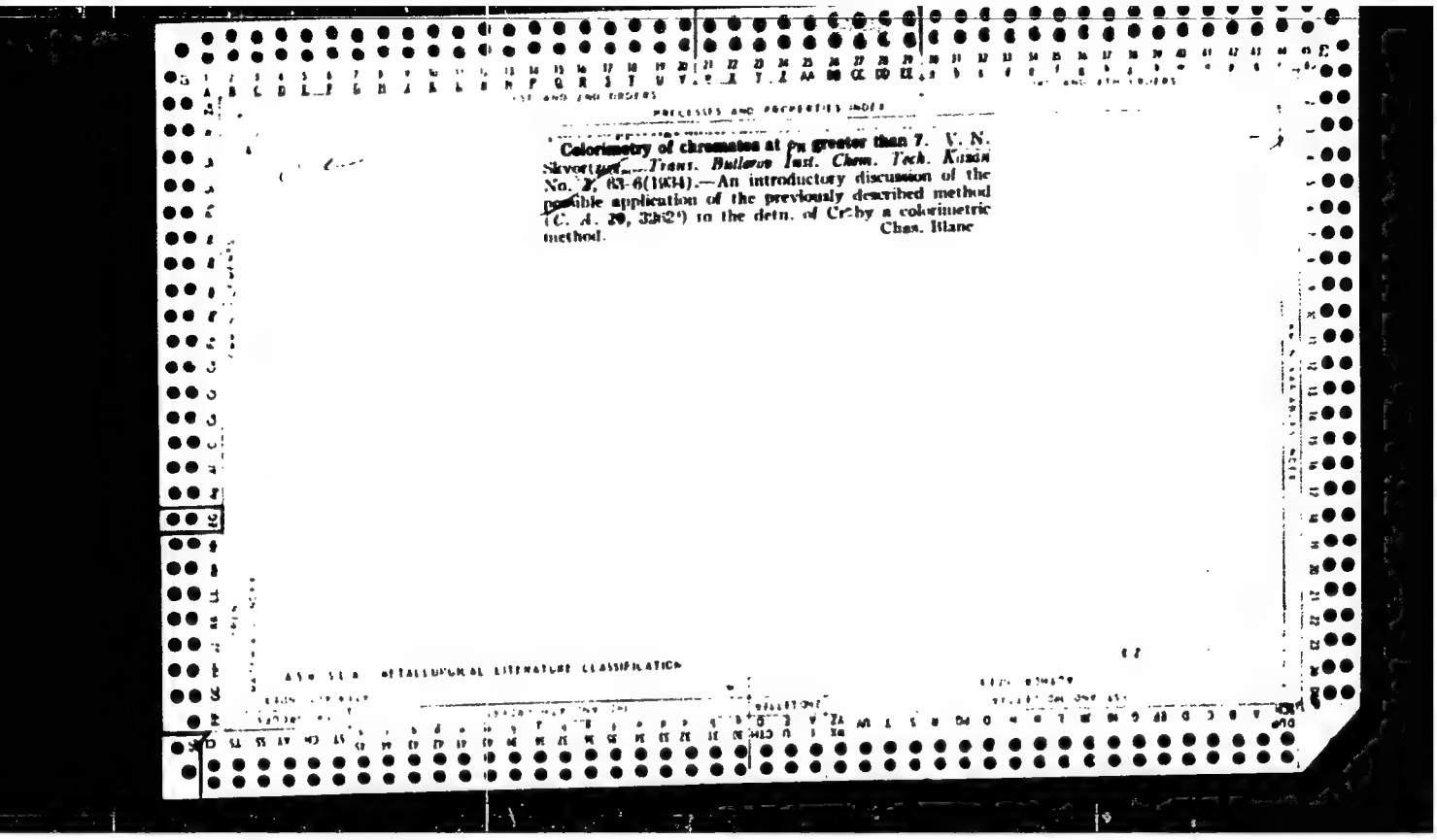
PROCESSES AND PROPERTIES INDEX

CA

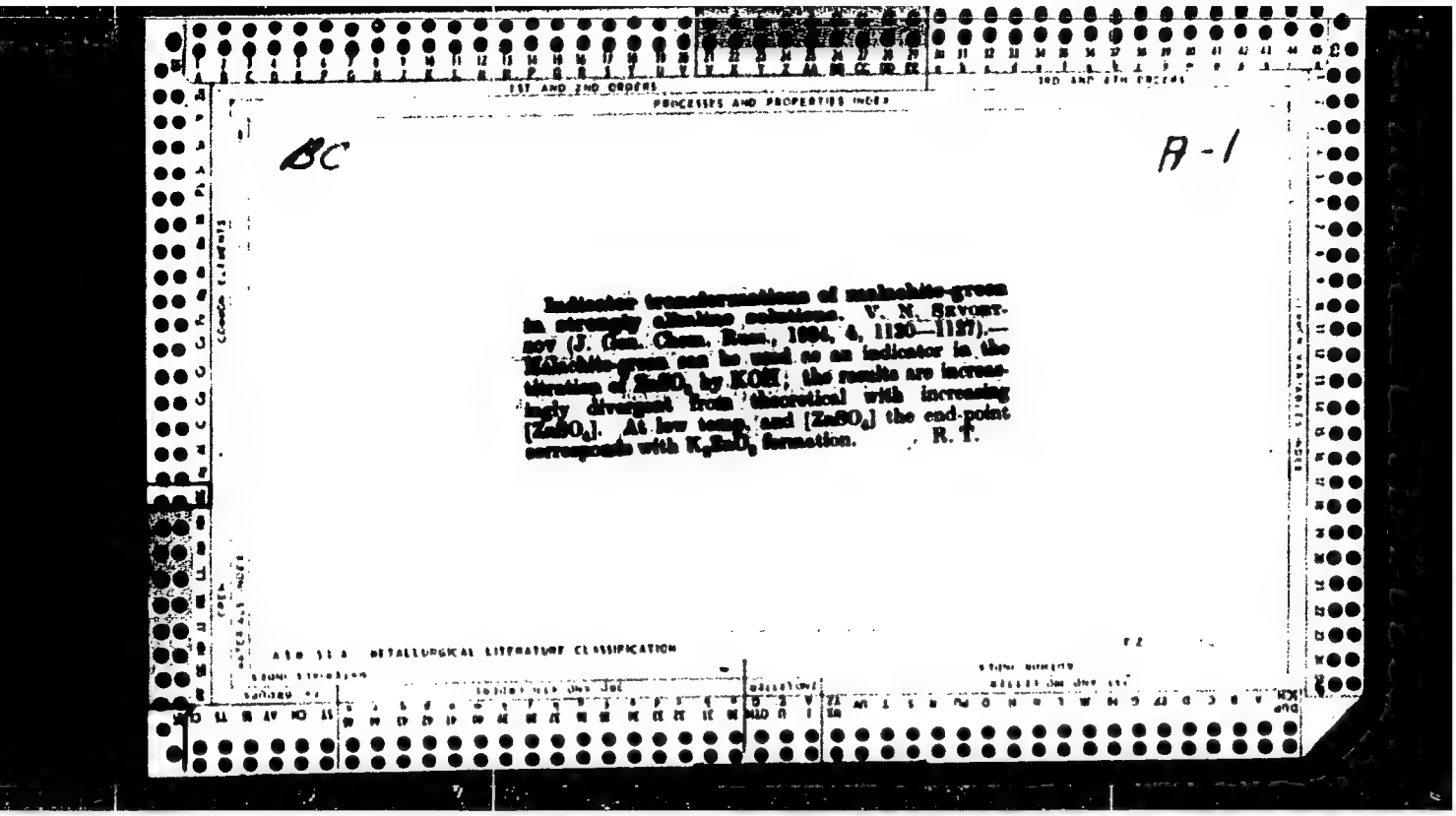
8

Volumetric determination of sulfate and barium ions. V. N. Skvortzov. *Trans. Butlerov Inst. Chem. Tech. Kazan* No. 1, 164-7(1934).—The method described depends on titrating sulfate with $BaCl_2$ in a buffered soln. contg. chromate. To det. Ba^{++}, an excess of standard H_2SO_4 is added before titrating with $BaCl_2$. V. D. K.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Colorimetry of chromates at p_H greater than 7. V. N. Skvortsov. *Trans. Butlerov Inst. Chem. Tech. Kazan* No. 2, 83-6(1934).—An introductory discussion of the possible application of the previously described method (*C. A.* **29**, 3382[9]) to the detn. of CrO_4 by a colorimetric method. Chas. Blanc

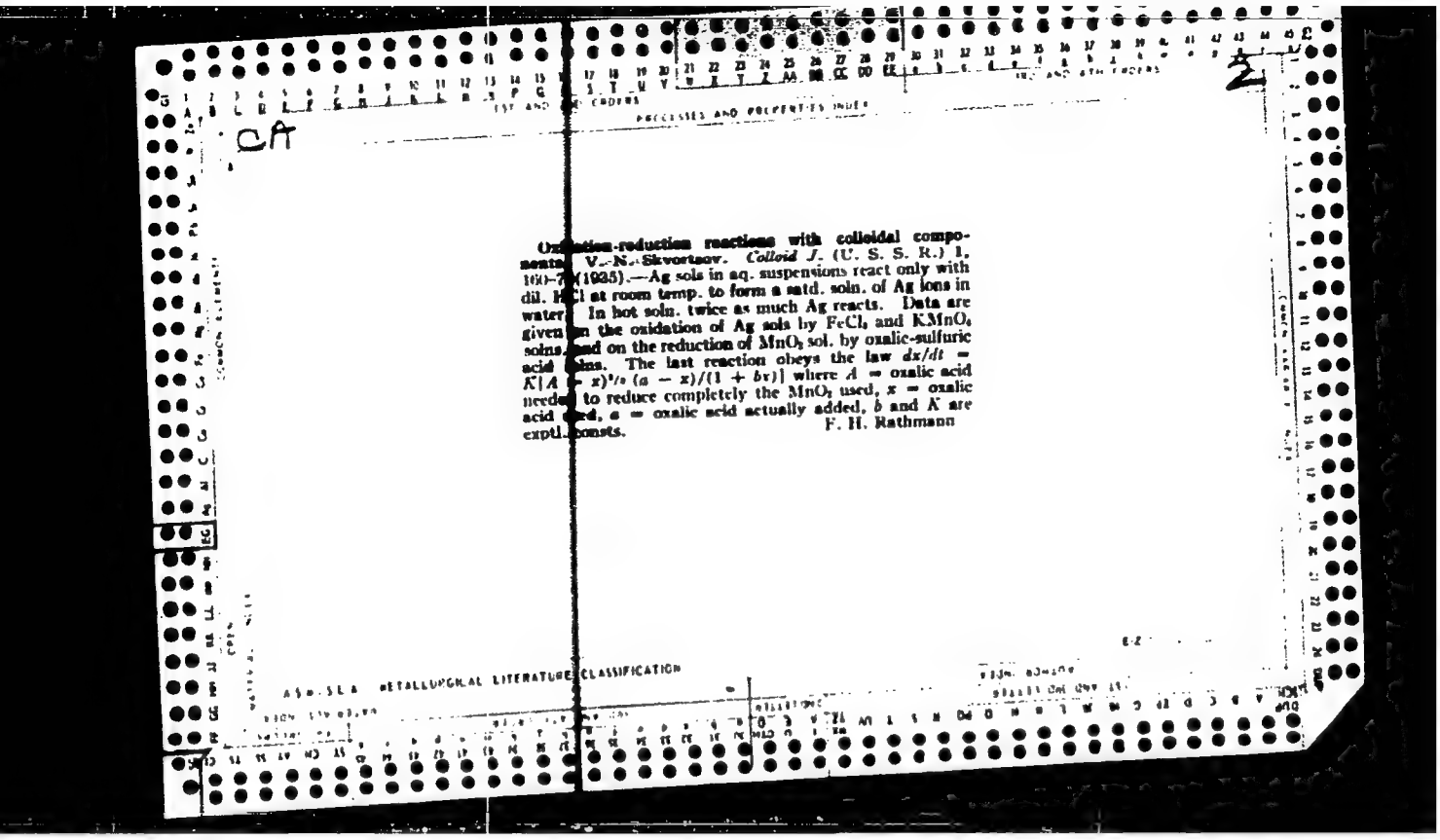


BC

A-1

Indicator transformations of malachite-green in strongly alkaline solutions. V. N. Savostyanov (J. Gen. Chem. Russ., 1934, 4, 1120—1127).—Malachite-green can be used as an indicator in the titration of $ZnSO_4$ by KOH; the results are increasingly divergent from theoretical with increasing $[ZnSO_4]$. At low temp. and $[ZnSO_4]$ the end-point corresponds with K_2ZnO_2 formation. R. T.

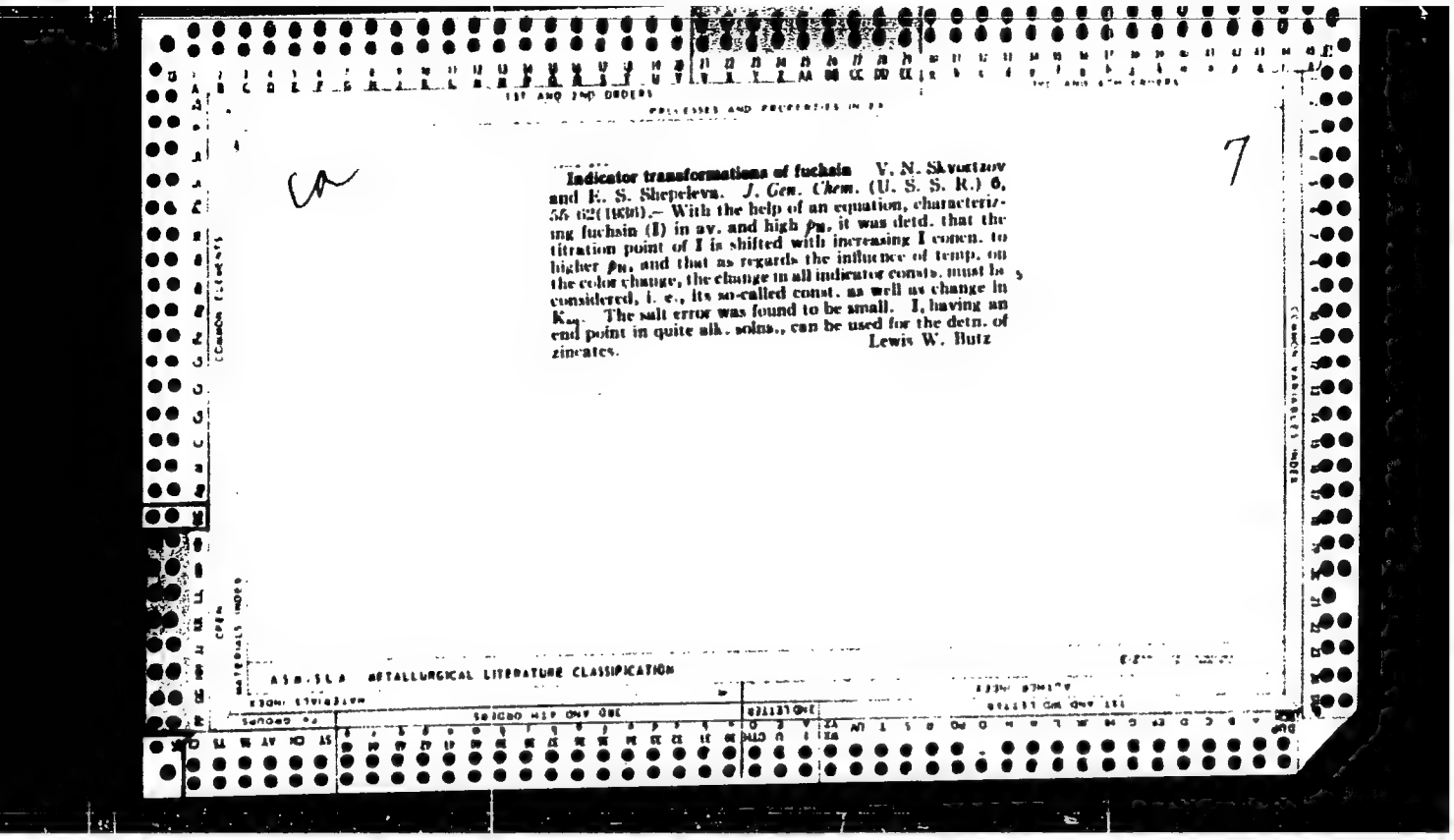
A60 S1A METALLURGICAL LITERATURE CLASSIFICATION



CA

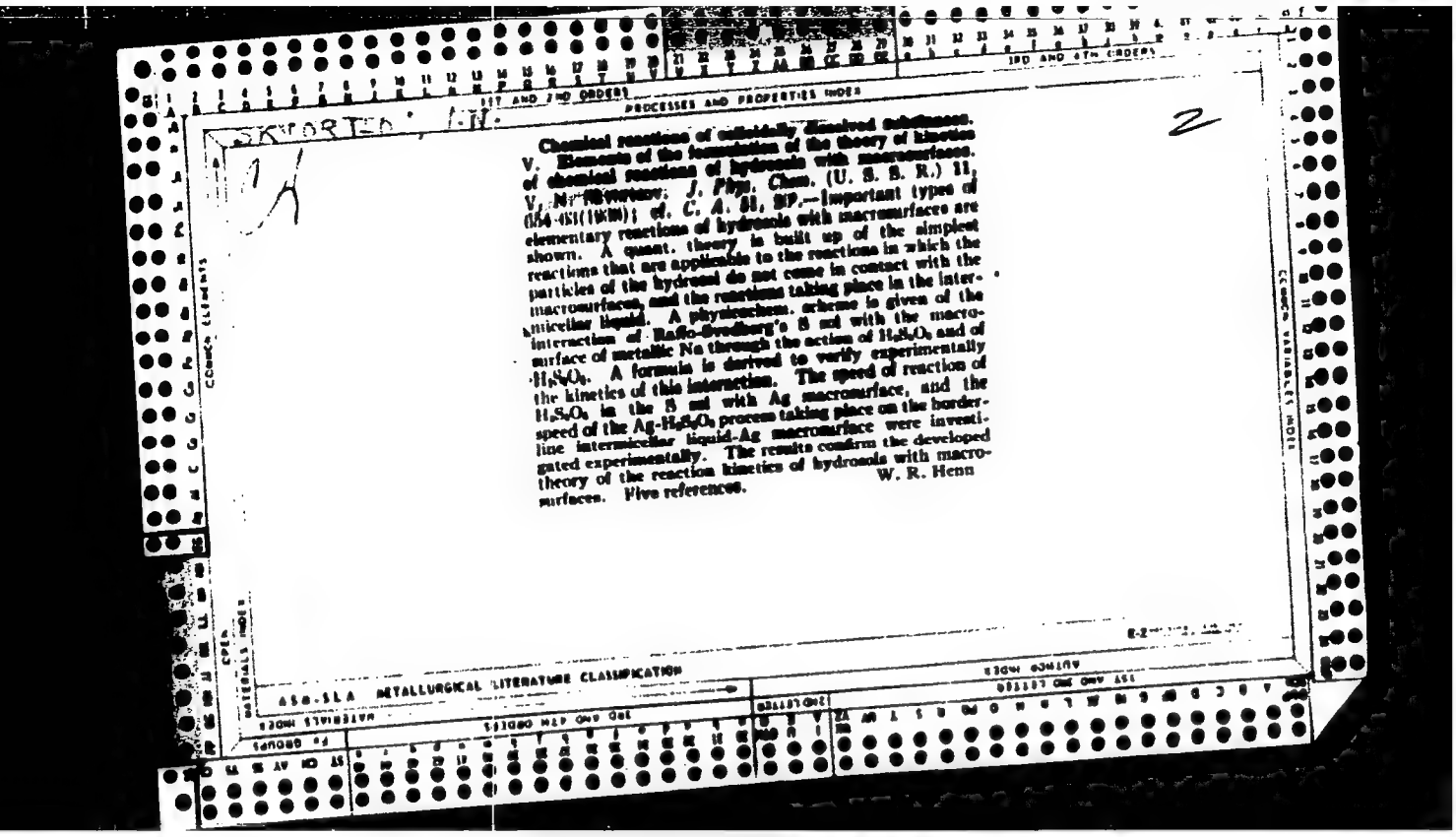
Oxidation-reduction reactions with colloidal components. V. N. Shvortsov. *Colloid J.* (U. S. S. R.) 1, 169–74 (1935).—Ag sols in aq. suspensions react only with dil. HCl at room temp. to form a satd. soln. of Ag ions in water. In hot soln. twice as much Ag reacts. Data are given on the oxidation of Ag sols by $FeCl_3$ and $KMnO_4$ solns. and on the reduction of MnO_2 sol. by oxalic-sulfuric acid solns. The last reaction obeys the law $dx/dt = K[A - x)^{3/2}(a - x)/(1 + bx)]$ where A = oxalic acid needed to reduce completely the MnO_2 used, x = oxalic acid used, a = oxalic acid actually added, b and K are exptl. consts.

F. H. Rathmann



Indicator transformations of fuchsin V. N. Skvortzov and E. S. Shepeleva. *J. Gen. Chem.* (U. S. S. R.) **6**, 55-62(1936).— With the help of an equation, characterizing fuchsin (I) in av. and high p_H, it was detd. that the titration point of I is shifted with increasing I concn. to higher p_H, and that as regards the influence of temp. on the color change, the change in all indicator consts. must be considered, i. e., its so-called const. as well as change in K_w. The salt error was found to be small. I, having an end point in quite alk. solns., can be used for the detn. of zincates.

Lewis W. Butz



Chemical reactions of colloidally dissolved substances. V. Elements of the formulation of the theory of kinetics of chemical reactions of hydrosols with macrosurfaces. V. N. Ribnikov. *J. Phys. Chem.* (U. S. S. R.) 11, 654-61(1938); cf. *C. A.* 31, 39P.—Important types of elementary reactions of hydrosols with macrosurfaces are shown. A quant. theory is built up of the simplest reactions that are applicable to the reactions in which the particles of the hydrosol do not come in contact with the macrosurface, and the reactions taking place in the intermicellar liquid. A physicochem. scheme is given of the interaction of Raffo-Svedberg's S sol with the macrosurface of metallic Na through the action of $H_2S_2O_5$ and of H_2SO_4. A formula is derived to verify experimentally the kinetics of this interaction. The speed of reaction of $H_2S_2O_5$ in the S sol with Ag macrosurface, and the speed of the Ag-$H_2S_2O_5$ process taking place on the border-line intermicellar liquid-Ag macrosurface were investigated experimentally. The results confirm the developed theory of the reaction kinetics of hydrosols with macrosurfaces. Five references.

W. R. Henn

PA 34T5

SKVORTSOV, V. N.

USSR/Chemistry - Colloids Jan 1947
Chemistry - Reactions

"Chemical Reactions in Colloidal Solutions," V. N. Skvortsov, 5 pp

"Kolloidnyy Zhurnal" Vol IX, No 1

Kinetics of the reaction of hydrosols, containing particles of similar charge. As a result of the experiments, the author was able to establish the main types of elementary reactions for hydrosols. Some basic kinetic formulas were drawn up based on simple reactions of hydrosols. The relationship of the sol of Raffo-Svedberg's sulphur, and the sol of Gutbir's silver was also shown. Submitted at Moscow Higher Technical School.

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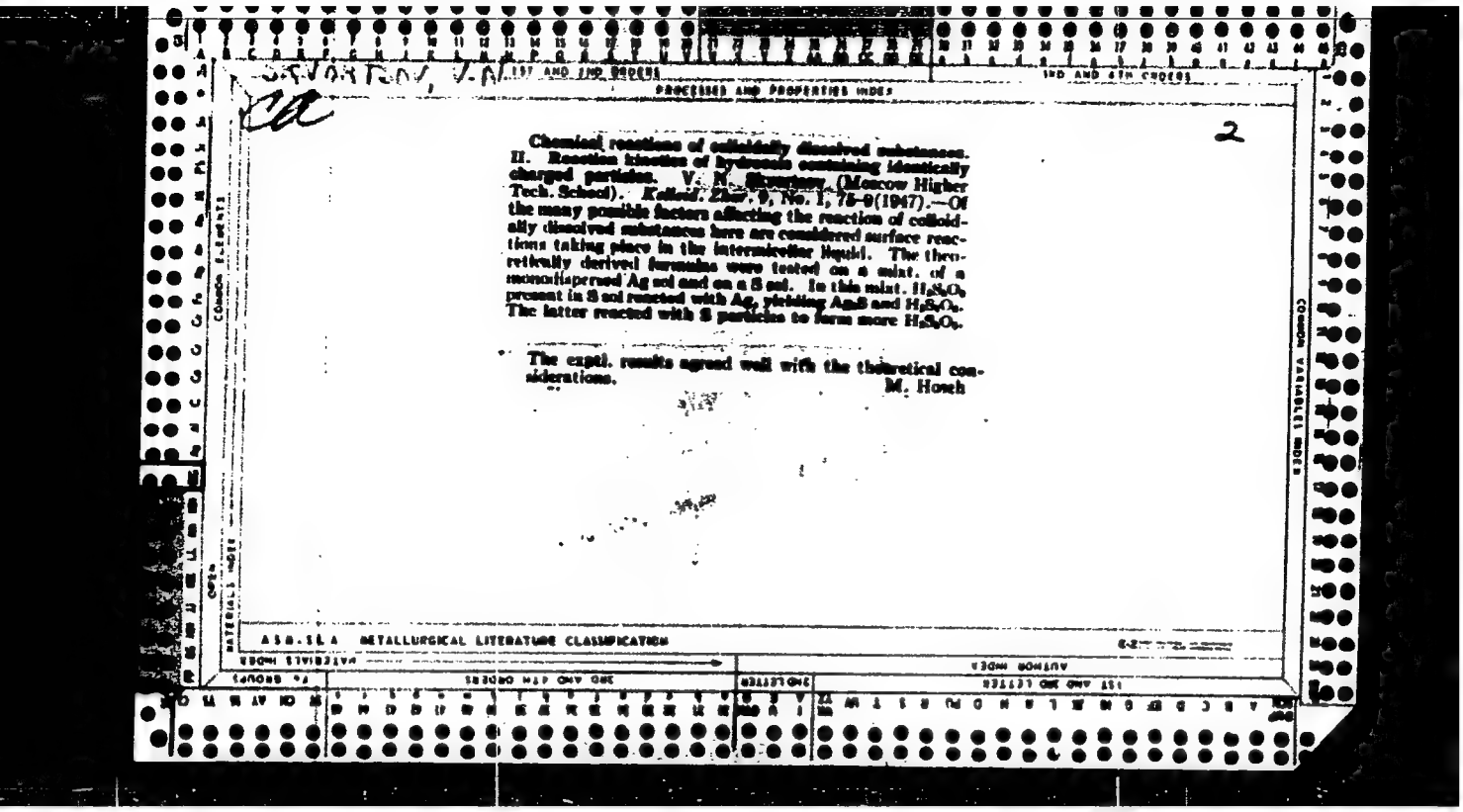

SAVOSTIN, V. A.

2

Chemical reactions of colloidally dissolved substances. II. Reaction kinetics of hydrosols containing identically charged particles. V. A. Shostin. (Moscow Higher Tech. School). *Kolloid. Zhur.* 9, No. 1, 75–9(1947).—Of the many possible factors affecting the reaction of colloidally dissolved substances here are considered surface reactions taking place in the intermicellar liquid. The theoretically derived formulas were tested on a mixt. of a monodispersed Ag sol and on a S sol. In this mixt. $H_2S_2O_3$ present in S sol reacted with Ag, yielding Ag$_2$S and $H_2S_4O_6$. The latter reacted with S particles to form more $H_2S_2O_3$.

The expt. results agreed well with the theoretical considerations.

M. Hoseh

CA

2

Chemical reactions of colloidally dissolved substances. III. Kinetics of interaction of oppositely charged hydrosols silver bromide and arsenic trisulfide. V. N. Skvortsov. *Kolloid. Zhur.* 9, 303–12(1947); cf. C.A. 41, 6354f and following abstr.—When colloidally dispersed AgBr contg. a small excess of Ag^+ was brought together with colloidally dispersed As_2S_3, the latter was coagulated by Ag^+ in the liquid medium. When oppositely charged sols are brought together, their coagulation has two limiting possibilities: chemically effective and chemically ineffective coagulation; in the latter case the rate of reaction is not affected. With 2 oppositely charged isomonodispersed sols contg. the same no. of particles, the collision of oppositely charged particles is chemically effective. If both sols coagulate rapidly and the change in radii of the particles is approx. the same, then the rate of reaction is proportional to the decrease of free surface on the particles. The general equation for simultaneous coagulation and chem. reaction is

$$\frac{dy}{dt} = Q(E-y)^{2/3}\left[\frac{Sn_0 - \frac{2n_0S_1\beta t}{(1+\beta t)^3}(1+3\beta t+3\beta^2t^2)}{Sn_0}\right]C,$$

where dy/dt is the rate of decrease of the no. of particles, Q is a const., E is the original no. of moles of all the monodispersed particles, S is the surface area of an original particle, S_1 is the segment of the original particle which becomes kinetically inactive when upon collision with other particles the latter adheres, n_0 is the no. of particles of one of the components in a given vol. of sol, $\beta = 4\pi DRn_0$, where D is the diffusion coeff. and R is the radius of the sphere of effective influence of an original particle, and C is the concn. of the reagent. For the case of AgBr and As_2S_3 studied experimentally this equation becomes:

$$\frac{dy}{dt} = \frac{(E-y)^{2/3}}{y}\left\{\Phi - 2H\left[\frac{\beta t+3\beta^2t^2+3\beta^3t^3}{(1+\beta t)^3}\right]\right\},$$

where dy/dt is the rate of decrease in the no. of As_2S_3 particles and Φ and H are consts. In this equation it is assumed that $\Phi(S_1/S) = \Phi(\alpha/3) = H$, where α is a coeff. of proportionality.

M. Hosch

CA

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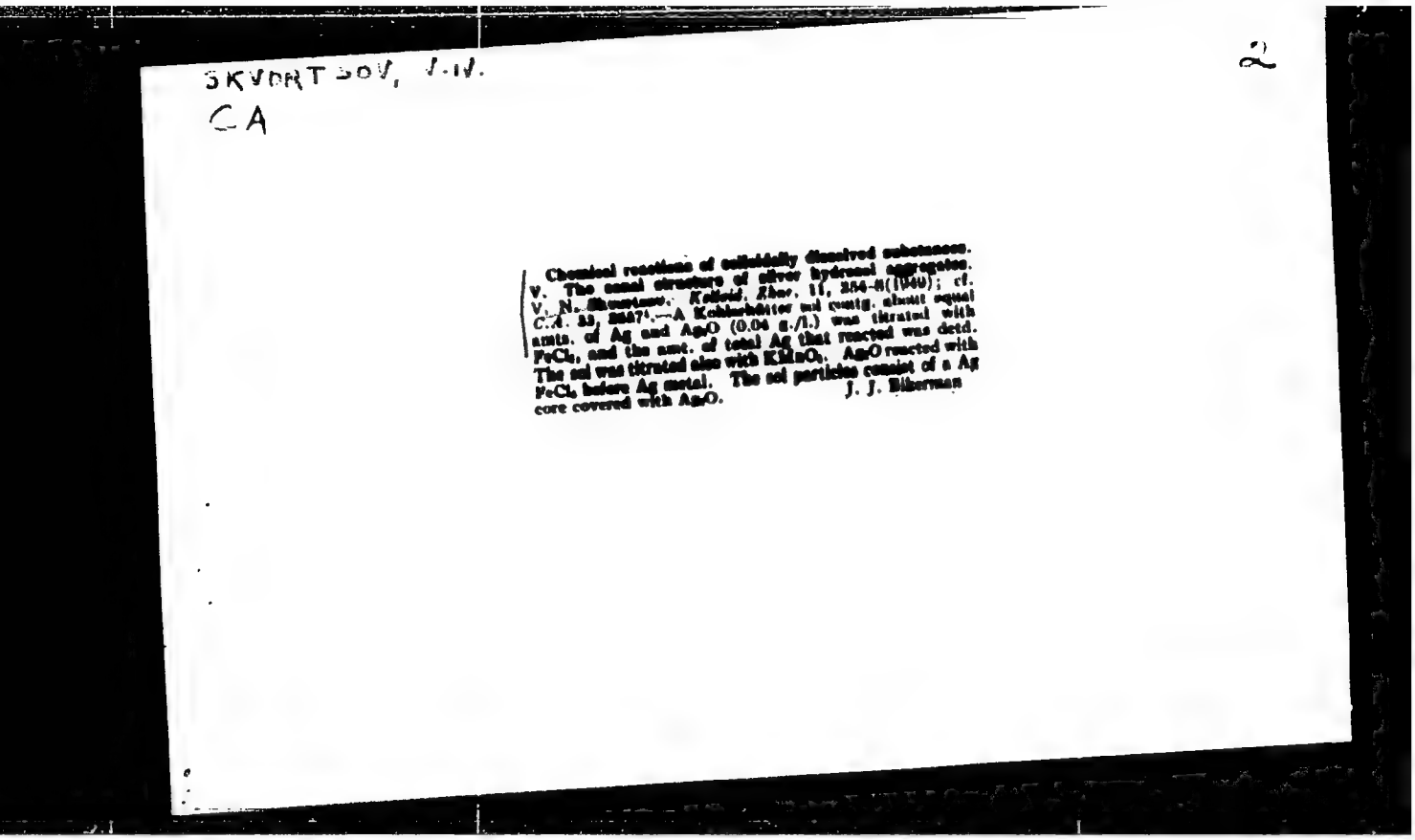
Chemical reactions of colloidally dissolved substances. IV. Kinetics of interaction of silver and sulfur hydrosols at their perikinetic coagulation and sedimentation. V. N. [illegible] (Bauman School Technol., Moscow). *Kolloid. Zhur.* [illegible]; cf. C.A. 44, and preceding abstr. Oden's S hydrosol and Gutbier's Ag hydrosol were dild. until each contained 8 × 10[illegible] particles/l.; the radii of the particles were, resp., 93 and 90 mμ. Then 0.5 l. of each and 0.12 l. of NaCl soln. contg. 19 g. NaCl were run into a shallow trough. After a time (30-70 sec.) the reaction was stopped by addn. of gelatin, and the concn. of primary S particles near the bottom was detd. ultramicroscopically. This concn. changes because of chem. reaction and of sedimentation. The exptl. data agree with the equations derived from Smoluchowski's theory. The concns. of pentathionic and trithionic acids in the mixt. were detd. after 1.7 hrs.; their decrease is accounted for by the alteration of the total surface of the particles.

J. J. Bikerman



SKVORTSOV, V.N.
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Chemical reactions of colloidally dissolved substances. V. The zonal structure of silver hydrosol aggregates. V. N. Skvortsov. *Kolloid. Zhur.* 11, 254-8(1949); cf. *C.A.* 33, 2507⁴.—A Kohlschütter sol coatg. about equal amts. of Ag and Ag_2O (0.04 g./l.) was titrated with $FeCl_3$, and the amt. of total Ag that reacted was detd. The sol was titrated also with $KMnO_4$. Ag_2O reacted with $FeCl_3$ before Ag metal. The sol particles consist of a Ag core covered with Ag_2O. J. J. Biberman

183T21

SKVORTSOV, V. N.

USSR/Chemistry - Colloids May/Jun 51

"Chemical Reactions of Colloidally Dispersed Substances. VI. Structure of Aggregates of Certain Polycomponent Colloidal Particles," V. N. Skvortsov, Higher Tech School imeni Bauman

"Kolloid Zhur" Vol XIII, No 3, pp 208-216

Developed theory of formation based on different rates of aggregation and reactions of substances, and by expt proved existence of zonally constructed colloids. Studied reaction rates of mono- and polydisperse sols contg MnO_2 and Mn_2O_3 with oxalic acid

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USSR/Chemistry - Colloids (Contd) May/Jun 51

and H_2SO_4, with and without presence of Na_2HAsO_4. Found aggregates of Mn oxides can accumulate on gold nuclei of Zsigmondi sol, forming almost monodisperse sol of Mn oxides with zonal distribution.

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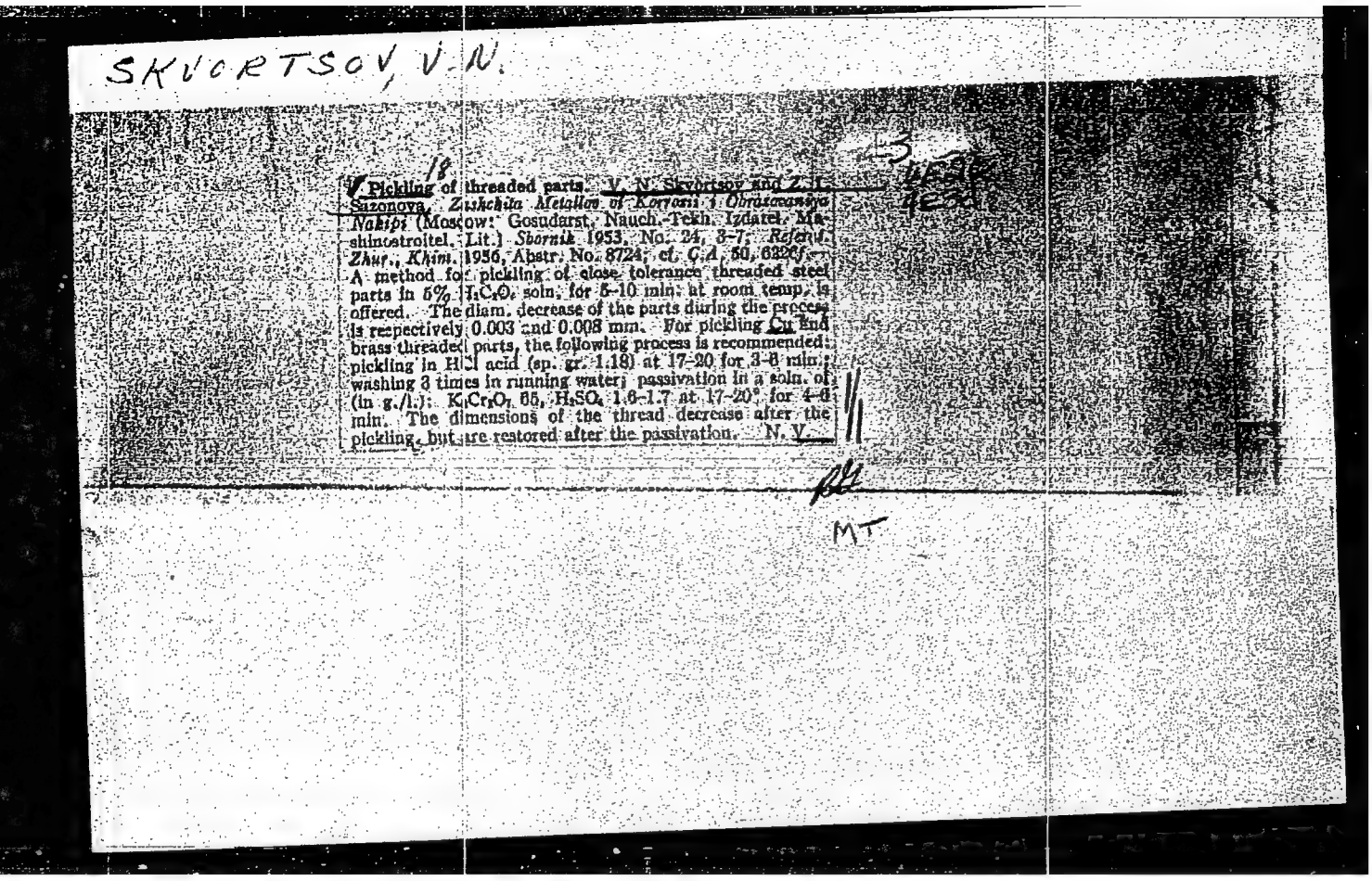
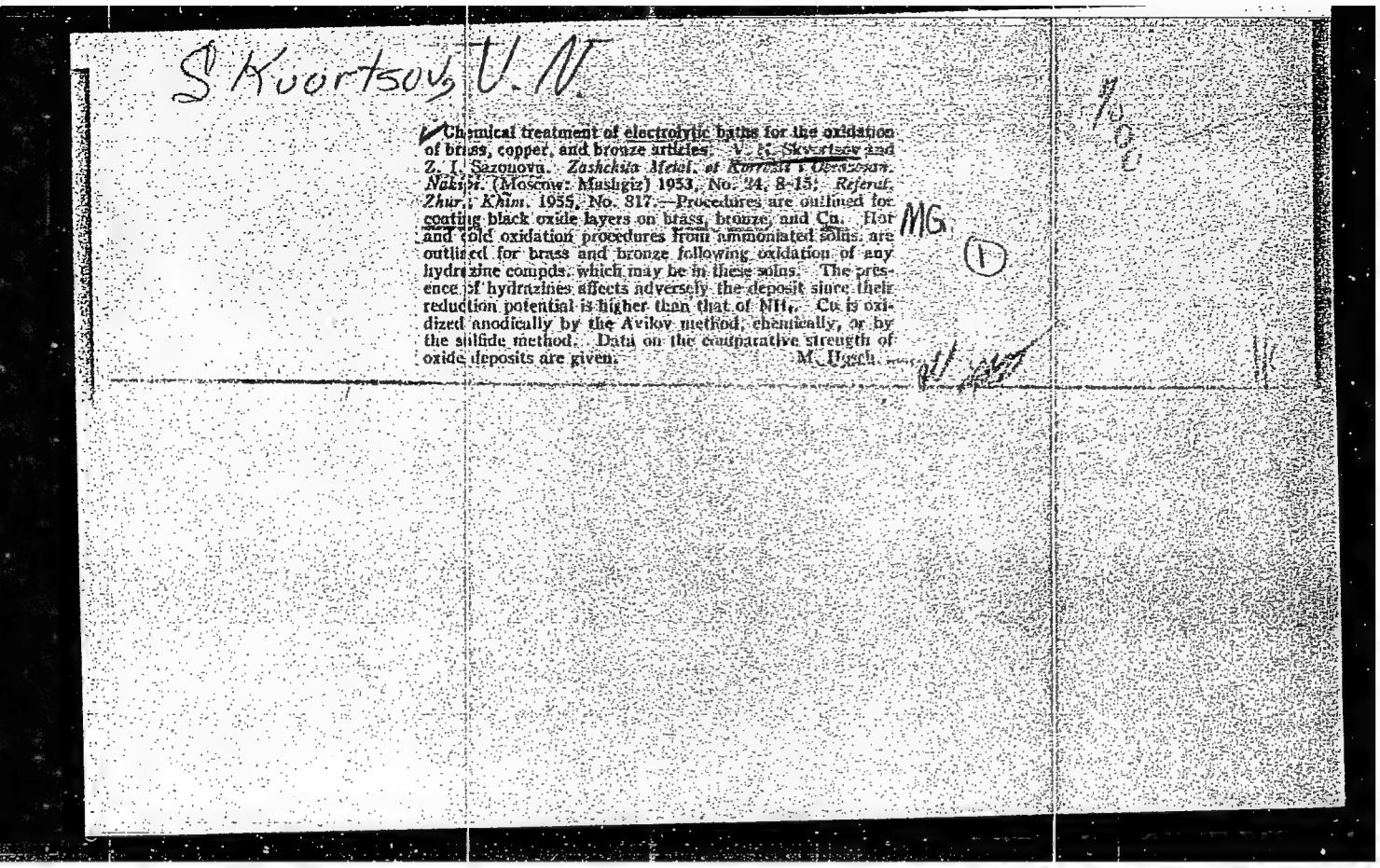


SKVORTSOV, V. N.

Pickling of threaded parts. V. N. Skvortsov and Z. I. Sazonova. *Zashchita Metallov ot Korrozii i Obrazovaniya Nakipi* (Moscow: Gosudarst. Nauch.-Tekh. Izdatel. Mashinostroitel. Lit.) *Sbornik* 1953, No. 24, 3-7; *Referat. Zhur., Khim.* 1956, Abstr. No. 8724; cf. *C.A.* 50, 6326f. A method for pickling of close tolerance threaded steel parts in 5% $H_2C_2O_4$ soln. for 5-10 min. at room temp. is offered. The diam. decrease of the parts during the process is respectively 0.003 and 0.008 mm. For pickling Cu and brass threaded parts, the following process is recommended: pickling in HCl acid (sp. gr. 1.18) at 17-20° for 3-8 min.; washing 3 times in running water; passivation in a soln. of (in g./l.): $K_2Cr_2O_7$ 65, H_2SO_4 1.6-1.7 at 17-20° for 4-6 min. The dimensions of the thread decrease after the pickling, but are restored after the passivation. N. V.



S Kvortsov, V. N.

Chemical treatment of electrolytic baths for the oxidation of brass, copper, and bronze articles. V. N. Skvortsov and Z. I. Sazonova. *Zashchita Metal. ot Korrozii i Okrashivan. Nakipi.* (Moscow: Mashgiz) 1953, No. 24, 8-15; *Referat. Zhur., Khim.* 1955, No. 817.—Procedures are outlined for coating black oxide layers on brass, bronze, and Cu. Hot and cold oxidation procedures from ammoniated solns. are outlined for brass and bronze following oxidation of any hydrazine compds. which may be in these solns. The presence of hydrazines affects adversely the deposit since their reduction potential is higher than that of NH_4. Cu is oxidized anodically by the Avilov method, chemically, or by the sulfide method. Data on the comparative strength of oxide deposits are given. M. Hoch

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(1)

SKVORTSOV, V.N., professor, doktor khimicheskikh nauk; SAZONOVA, Z.I., assistent.

Trisodium phosphate substitutes used in degreasing soldered brass parts. [Trudy] MVTU no.24:16-19 '53. (MLRA 7:10)
(Metal cleaning)

SKVORTSOV, V N

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SKVORTSOV, V N , ED.

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65 P. ILLUS., TABLES (MOSCOW. VYSSHEYE TEKHNICHESKOYE UCHILISHCHE, 36)

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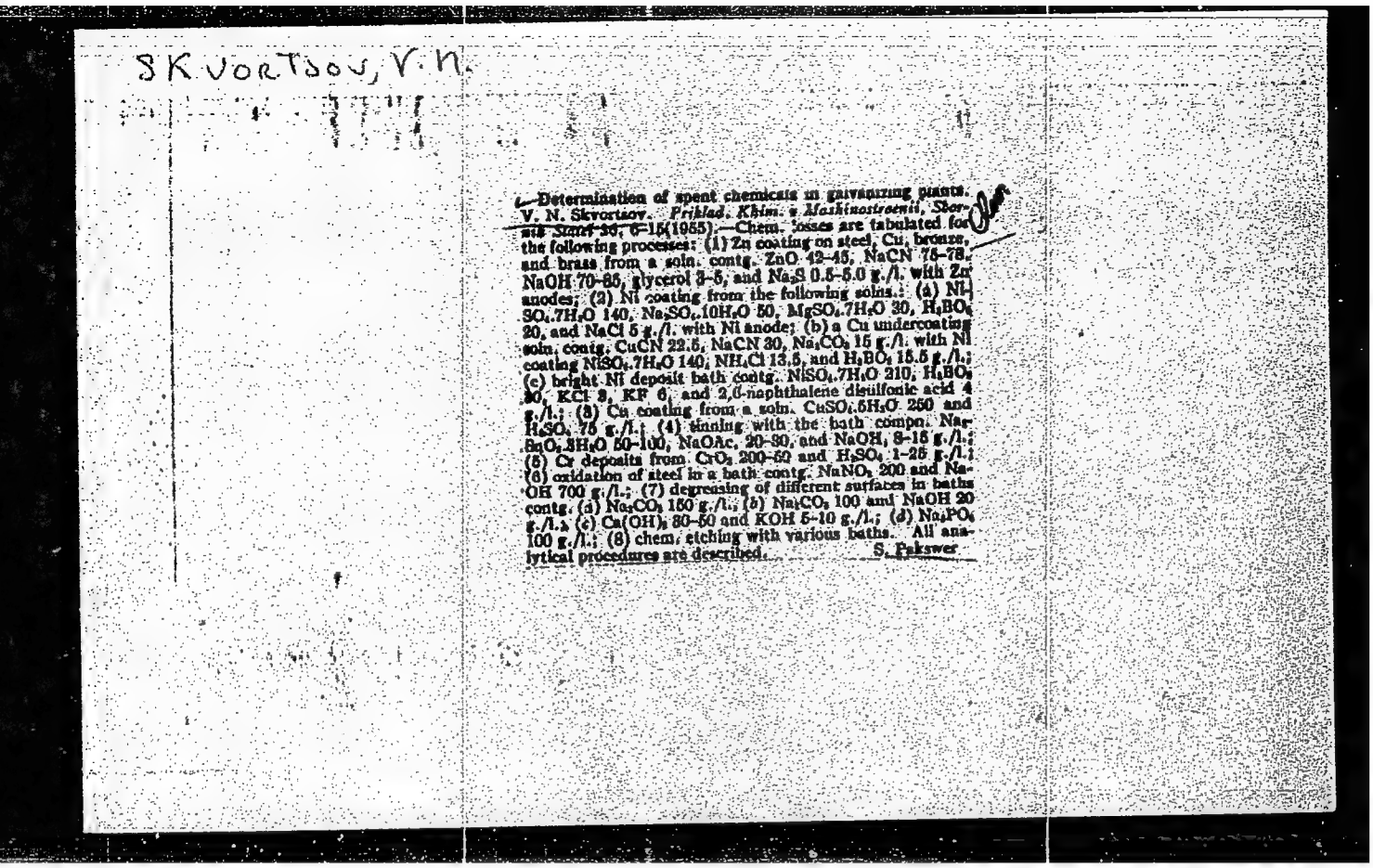
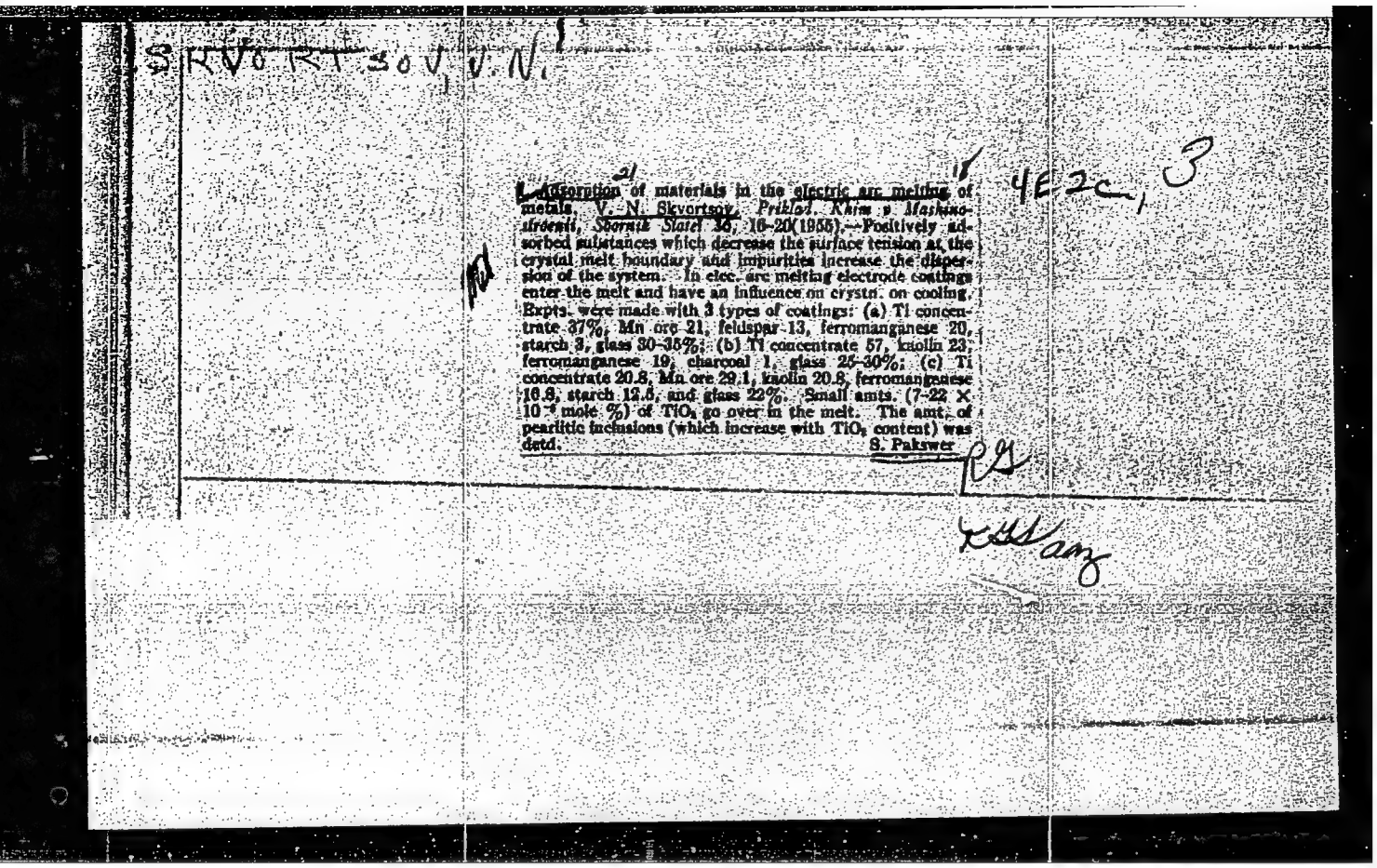


SKVORTSOV, V.N.

Determination of spent chemicals in galvanizing plants. V. N. Skvortsov. *Priklad. Khim. i Mashinostroenii, Sbornik Statei* 36, 6-15(1955).—Chem. losses are tabulated for the following processes: (1) Zn coating on steel, Cu, bronze, and brass from a soln. contg. ZnO 42-45, NaCN 75-78, NaOH 70-85, glycerol 3-5, and Na_2S 0.5-5.0 g./l. with Zn anodes; (2) Ni coating from the following solns.: (a) $NiSO_4.7H_2O$ 140, $Na_2SO_4.10H_2O$ 50, $MgSO_4.7H_2O$ 30, H_3BO_3 20, and NaCl 5 g./l. with Ni anode; (b) a Cu undercoating soln. contg. CuCN 22.5, NaCN 30, Na_2CO_3 15 g./l. with Ni coating $NiSO_4.7H_2O$ 140, NH_4Cl 13.5, and H_3BO_3 15.5 g./l.; (c) bright Ni deposit bath contg. $NiSO_4.7H_2O$ 210, H_3BO_3 30, KCl 3, KF 6, and 2,6-naphthalene disulfonic acid 4 g./l.; (3) Cu coating from a soln. $CuSO_4.5H_2O$ 250 and H_2SO_4 75 g./l.; (4) tinning with the bath compn. $Na_2SnO_3.3H_2O$ 50-100, NaOAc, 20-30, and NaOH, 8-15 g./l.; (5) Cr deposits from CrO_3 200-50 and H_2SO_4 1-25 g./l.; (6) oxidation of steel in a bath contg. $NaNO_3$ 200 and NaOH 700 g./l.; (7) degreasing of different surfaces in baths contg. (a) Na_2CO_3 150 g./l., (b) Na_2CO_3 100 and NaOH 20 g./l., (c) $Ca(OH)_2$ 30-50 and KOH 5-10 g./l., (d) Na_3PO_4 100 g./l.; (8) chem. etching with various baths. All analytical procedures are described. S. Pakswer



SRV6 RT 30 V, V. N.

Adsorption of materials in the electric arc melting of metals. V. N. Skvortsov. *Prikład. Khim. i Mashinostroenii, Stornit. Stalei* 36, 16-20(1955).—Positively adsorbed substances which decrease the surface tension at the crystal melt boundary and impurities increase the dispersion of the system. In elec. arc melting electrode coatings enter the melt and have an influence on crystn. on cooling. Expts. were made with 3 types of coatings: (a) Ti concentrate 37%, Mn ore 21, feldspar 13, ferromanganese 20, starch 3, glass 30–35%; (b) Ti concentrate 57, kaolin 23, ferromanganese 19, charcoal 1, glass 25–30%; (c) Ti concentrate 20.8, Mn ore 29.1, kaolin 20.8, ferromanganese 16.8, starch 12.5, and glass 22%. Small amts. (7–22 × 10^{-4} mole %) of TiO_2 go over in the melt. The amt. of pearlitic inclusions (which increase with TiO_2 content) was detd.

S. Paksver

4E2c, 3

SKVORTSOV, V.N., doktor khimicheskikh nauk, professor.

Corrosion of metals in the systems with medium degree of dispersion. Trudy MVTU no.36:21-29 '55. (MLRA 9:9)

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SO: Knizhnaya Letopis', No. 25, 18 Jun 55

* For the Degree of Doctor of Physicomathematical Sciences

SOV/124-57-8-9262

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 8, p 99 (USSR)

AUTHOR: Skvortsov, V. S.

TITLE: On the Solution of a System of Differential Equations of the Elasticity Theory by the Finite-difference Method (K resheniyu sistemy differentsial'nykh uravneniy teoriy uprugosti metodom konechnykh raznostey)

PERIODICAL: Nauch. zap. L'vovsk. torgovo-ekon. in-ta, 1956, Nr 2, pp 199-207

ABSTRACT: On the basis of the work of Courant, Friedrichs, and Levi (Upsekhi matem. nauk, 1941, Nr 8), the paper studies the question of the existence and uniqueness of the solution of a system of difference equations which correspond to the differential equations of the theory of elasticity in a spatial problem for the case of given boundary displacements.

P. M. Varvak

Card 1/1

SKVORZOV V.S.

SUBJECT USSR/MATHEMATICS/Differential equations CARD 1/1 PG - 746
AUTHOR SKVORZOV V.S.
TITLE The application of the difference method for the solution of systems of partial differential equations.
PERIODICAL Doklady Akad.Nauk 112, 20-23 (1957)
reviewed 5/1957

The author investigates the question of the applicability of the difference method for the solution of the first boundary value problem for systems of linear partial differential equations of second order and elliptic type. The differential equations are replaced by difference equations. Under some additional assumptions for this approximating system the existence of the solution is proved by the construction of the fundamental matrix. Without maximum principle, which in this case cannot be applied, the error of such an approximative solution is determined for systems of second order with constant coefficients in the R_2 and R_3. The author's results partially are generalizations of results of Duffin (Duke Math.J. 20, no.2, 233 (1953)) and of Courant, Friedrichs and Levi.

INSTITUTION: Trade-economical Institute, Ljvov.

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